THE
Purchasers Pattern,
Much Enlarged.

The First Part.

Shewing the true value of Land or Houses, by Lease, or otherwise.

Whereunto is added many rules for the valuing of the ruined Foundation in the City of *LONDON*, and for the composing of Differences between Landlord and Tenant about rebuilding them: also Rules and Tables for the valuing of all Party-Walls.

Also Tables of Interest and Rebate at 6 per Cent.

The Second Part.

Shews the measuring of *Land*, *Board*, *Timber*, &c. correcting the false wayes used by many therein.

Also the Art of Gauging much enlarged, shewing not only the measuring of Wine, Beer, and Ale Vessels, but also the Gauging of all manner of Brewers Tuns.

With Tables of the Excise of Beer *and* Ale.

Also many other Rules and Tables of Weights and Measures, Forreign and Domestick; Tables of Accounts, Expences, *&c.*

The fifth Edition; by *Henry Phillips*.

LONDON, Printed for *Ben. Billingsley*, at the *Printing-Presse* in *Cornhill*, and *Samuel Crouch*, at the Corner of *Popes-Head-Alley* next *Cornhill*, 1676.

Phillipps (H.) K

IMPRIMATUR.

Ex Æd. Sab. 24. *Mart.* 1662. Geo. Strading, *S. T. P. Rev. in Christ. Pat. D.* Gilb. *Epiſc.* Lond. *a Sac. Domeſt.*

March 28. 1663.

Oct. Pulleyn, Ward.

To the Reader.

Courteous Reader,

THis little Book was almost utterly destroyed and lost in our late sad and lamentable Desolation, by the furious Flames, the Book-seller saving not one of them. Alas, how could a little Paper scape, when so many strong Houses, and stately Temples could not resist, but were reduced to dust and ashes! But yet, as I hope to see our Famous City to be built again, and that in a more convenient and beautiful Form and Fashion, by the careful Order and Directions of our most Gracious Sovereign, the Kings Majesty, and the High and Honourable Court of Parliament) and by the ready Conformity of our Citizens thereunto: So I have taken some pains, not only to revive & reprint this Book, but have added many Observations, Rules, and Tables, very necessary in this juncture of time

about the true worth and value of these ruined Foundations, and for the composing of all differences and questions which may arise between Landlords and Tenants, concerning their Interest in these Foundations, and the cost and charges of the building thereof, and also for the reckoning up the cost and charges of all Party-Walls between House and House: all which I hope will give good satisfaction to most men; and so be a means not only of improving the Book, but of forwarding the building of our Desolate City.

I have also added many things concerning Gauging, shewing how to find the true content of all manner of Brewers Tuns, and calculated new tables for that purpose; as also for the ready reckoning up of the Excise of Beer and Ale.

By all which I hope I have made the Book, though not much bigger, yet much better: So not doubting to find your kind acceptance, as I have done often formerly, I rest, Yours,

Henry Phillips.

Rules and Directions for the Purchasing the Ground Plots and Foundations of Houſes lately burned in the City: and for the ſtating of the Intereſt and Claims between Landlord and Tenant in the ſaid Foundations, in order to the Building thereof, and ſhewing the true value of all party Walls.

Courteous Reader,

THis buſineſs being of ſo great concernment, and falling in my way, I could not but take ſome notice thereof; yet I will not take upon me to be a judge, abſolutely to binde men to my rules; but only ſhew you, how by my Tables of Purchaſes, you may be able to give a reaſonable value of theſe things, and ſo know when and how to make a good bargain either in buying or ſelling

Now there being many and divers caſes, and ſome of them more hard and intricate than others, it will be the beſt way to begin with ſuch as are the moſt plain and

ſimple queſtions; and ſo they will lead and help to direct in thoſe which are more difficult and perplexed.

The firſt queſtion therefore ſhall be concerning the true value and worth of theſe foundations, what may be the beſt way to judge and reckon the true value of them?

There are ſeveral ways which many men uſe to value theſe foundations, by comparing whereof, you may the better judge both of the way to value them by, and alſo of the true worth of the ſaid Foundations.

Firſt, Some value them by their length or breadth toward the ſtreet, reckoning every foot in front to be worth 4, 5, 6, 8, or 10 ſhillings yearly, according to the ſtreet or place they ſtand in; and this yearly value they reckon at 20 *years* purchaſe and ſo every foot in front is worth 4, 5, 6, 8, or 10 pounds. But this way is very uncertain, for there is not only much difference in price in ſeveral Streets, but likewiſe there is much difference in the depth or length of Houſes, which may cauſe much variety in the price and value thereof: ſo that this way can be no certain or general rule given, ſo many things being to be conſidered. Beſides hereby men will be very ready to deceive themſelves, and value them at too low a

rate.

rate. For a foot is ſo ſmall a meaſure, that men may count 10 *l.* a great price for a foot of ground, but I ſhall ſhew you that it may be worth 15 or 20 *l.* in many places.

Secondly, Others there are who value theſe foundations by their length and breadth, meaſured by the foot; reckoning every foot ſquare to be worth three *or* four ſhillings. But this way *will* deceive you as much, or more, than the other, if you are not careful to ſet a good rate upon each foot of ground; for a foot is ſo ſmall a meaſure, that men think it little worth: ſo that this ground being ſcant and precious, is ready to be too much undervalued, one foot of Ground here being worth 8 or 10 ſhillings, which in Land in the Countrey, is not worth half a farthing, though you reckon the Land at 20 ſhillings an Acre, and 20 pound the purchaſe; for ſo it is worth but one penny a Yard, and every yard hath nine foot.

The way therefore which I ſhall preſcribe, as more general and certain for the valuing of theſe foundations, ſhall be this.

Get a true and indifferent eſtimate of the *yearly* rent of theſe houſes, what they were formerly worth at a good handſome moderate rack Rent, without any abatement or diminution thereof by fines, or any

other considerations: the which being known, you may reckon the true value of these foundations to be worth between four and five years purchase, according to the said yearly Rent; that is, about the third part of the full worth or purchase of the fee simple of the house. And that this is a very fair and moderate value of these Foundations, I shall demonstrate unto you by these considerations.

First, I take it for granted, that a good fair house, standing well and conveniently, may be worth twelve years purchase at the least.

Secondly, I find by several inquiries and observations, that an house of the third rate, fronting the high Streets, may be built at the most, for eight *years* Rent of the former house: so that if the house was worth 50 or 60 pounds a *year*, it may be built for 400 pound, or thereabout.

Thirdly, if you take this eight *years purchase* for the Building, out of 12 *years purchase* for the fee simple, there will remain 4 *years purchase* for the worth of the foundation, which is full one third part of the full value of the said house. Now this I suppose is as low a reckoning as can be made of the value of houses, to value them but at 12 *years purchase*, whereas they are

rather

rather worth 14 or 15 *years purchase*; and ſo if 8 *years purchaſe will* build them, the foundation or ground-plot may be worth 4 or 5 *years purchaſe* very *well*. And as for the charges of the Building, that *will* not amount to more than 8 *years purchaſe*, as I ſhall ſhew you preſently. And I doubt not when thoſe houſes are new built, they *will* yeild as much rent as formerly, & be worth as much, or more, for ſale: yea, ſome Ground and Houſes may be much improved; and therefore upon theſe grounds and reaſons, I ſtate this firſt queſtion concerning the value of theſe foundations, that it doth amount at leaſt to the third part of the value of the former houſe, while ſtanding; that is about 5 years purchaſe of the former rent.

There is nothing can be objected againſt this, if the charges of Building doth not exceed 8 *years purchaſe*; therefore for the clearing of this, Suppoſe an houſe, which is one rod, or 16 foot and an half in front, and two rods deep; the compaſs of this houſe will be ſix rods; and if this houſe ſtand in the high Streets, having a Cellar, and 4 Stories, the height thereof will be 50 foot, or 3 rods: ſo that there will be 18 rod of Brickwork in the Wall, which may all be reduced to a brick and an half thick,

and ſo each rod of Brick-work takes up 4500 Bricks, and will coſt about 7 *l.* the building, which will come to in all 126 *l.* The timber-work for Floors, Windows, and Roofs may coſt as much more; and the Tyling, Plaiſtering, Lead, and Glaſſing, as much more alſo: ſo that the whole amounts to 378 pounds: the allowance for the Party Walls will very well pay for the Chimneys. So that this houſe cannot amount to above 400 pound the Building; and ſuch an houſe ſtanding in any of the High ſtreets, cannot be worth leſs than 50 pound a year, which in 8 *years* comes to 400 pound: ſo that the building cannot coſt above 8 *years purchaſe*. Yea, if you reckon this houſe at 60 pound *a year*, as it may very well yield in ſome places, then 7 *years purchaſe*, which amounts to 420 pound, will very well build it.

Now as I ſaid before, if the houſe may be built for 7 or 8 *years purchaſe*, and may be ſold for 14 or 15 *years purchaſe*, the ground may very well be worth 5 or 6 *years purchaſe* if not more in ſome places.

For here I muſt tell you, though this way of valuing the ground be as equal and general a rule as can be; yet there muſt be ſome reſpect had to the place where the houſe ſtands. For if this houſe ſhould ſtand

in

in some ordinary Lane, it would not yield above 30 pound a year, which is but half the rent aforesaid, and yet it would cost 300 pound the building, which is 10 *years purchase*; so that there remains but 5 *years purchase* for the value of the ground.

Therefore if you *will* more exactly judge and determine of the worth of these foundations, it *will* be best to range them into three sorts, reckoning the first and lowest sort of houses which yield least rent, at 4 *years purchase*; the second sort of houses which will yield a moderate rent at 5 *years purchase*; the third sort of houses which *will* yield the rent, may be reckoned at 6 *years purchase*. And according to this account you may know very *well* how to make your bargain for your advantage, either in buying or selling these foundations.

And you *will* find this way much more certain than reckoning of them by the foot, either in front only, or in front and depth, which *will* deceive you, and gives too low an estimate of these foundations.

For now, suppose the house mentioned before, being about 16 foot in front, standing in some high street in a good place, you may think that 10 shillings a foot, that is 8 pound a year; and this reckoned at 20

year

years purchaſe which comes to 160 pound to be a good and ſufficienr price for the ſaid ground; and this is as high a rate as moſt men will judge it that way. Whereas I have proved plainly, that if the houſe yeilds but 50 pound a *year*, and reckon the ground but at 5 *years purchaſe*, it will come to 250 pound. But if the houſe yeild 60 pound a year, then at 5 *years purchaſe* the ground is worth 300 pound, and at 6 *years purchaſe* (which it may be reckoned at in ſome places) it comes to 360 pound, which is above twice the price the other way.

If you reckon theſe foundations by the foot, not only *in* front, but in depth; ſo the front being about 16 foot, & the depth 32 foot; theſe two multiplied together, make the content of the foundation to be 512 foot. Now who would judge ſo ſmall a parcel of Ground as one foot ſquare to be worth 10 or 12 ſhillings; men rather account it but at 3 or 4 ſhillings. But if you reckon it at 10 ſhillings a foot, it *will* yield but 256 pound, which is the loweſt rate that it can be worth, being reckoned the other way.

And thus I hope I have fully and plainly reſolved this queſtion, having been the more large in it, becauſe it is a queſtion wherein ſo many are concerned; and it being

being the foundation of *all* the reſt, which muſt uphold and help us in the reſolution of the following caſes.

The Second Queſtion.

A Landlord having a plot of Ground but wanting money to build, and being not willing to ſell, hath found out one that will build upon it, who can lay no claim or title to the Ground: Now the queſtion is, what rent, and what term of *years* may be *fairly* given *and taken* between this *Landlord* and his *Tenant*, in conſideration for his building the houſe upon the *ſaid ruined foundation*?

In Anſwer hereunto, Firſt, Conſider that it cannot be expected that any leſs rent ſhould be *paid*, than the *yearly value* of the ground is worth; which, by what *was ſaid* before, may be Accounted to be *a* third *part* of the former *yearly Rent*: ſo that if the houſe was formerly worth 60 *pound a year*, then 20 *pound may* be at *leaſt allowed* for the *yearly rent hereafter*.

Secondly, If the *Tenant* be at the whole *coſt and charges* of building the houſe, there is *as* little reaſon that he ſhould *pay* any more rent than the Ground-Plot it ſelf

is worth: for so he should pay rent for his own money bestowed in building the said house.

Thirdly, It is plain therefore that the Landlord should allow him such a competent number of years, that may bring him in his cost and charges again, by the abatement of the two thirds of the former rent; and so the former rent will be satisfied, one third being to be paid for rent to the Landlord, and the other two thirds being allowed for the building of the said house.

Now the stress of the question is, what number of *years* may be allowed and taken in this case?

For answer hereunto, your best way will be to reckon it up after this manner.

Suppose the house aforesaid to be worth 60 pound a *year*, a third part thereof being 20 *pound*, may be reserved for the rent; the other two thirds being 40 *pound a year*, is to be bought out (as it were by way of a fine) being to be laid out in building the house. Now this 40 *pound a year*, in 10 *years*, comes to 400 pound, and will be sufficient to build the house: so that it appears that the Landlord is to allow him such a number of *years* in his Lease as may be worth 10 *years purchase*; and so the *Tenant* by his building doth purchase the *abate-*

batement of 40 *pound a year*, and payes only 20 *pound a year* rent.

Now the queſtion is, how many *years Leaſe* may be allowed for this 10 *years purchaſe*.

To reſolve this, you ſhall find by my *Tables of purchaſe*, that a *Leaſe* of 21 *years*, is worth 10 *years purchaſe* after the rate of 8 *per Cent.* And ſo long a *Landlord* may very well give; but a *Tenant* will hardly be content to take it, though hereby he makes 8 *per Cent.* of his Money. For moſt men are apt to reckon theſe ſhort *Leaſes* at too low a rate, and will give greater Fines, and beſtow their coſt more willingly upon a longer *Leaſe*, though it appears by the *Tables*, that a longer *Leaſe* is not worth ſo much more as men ordinarily value them at.

But I ſuppoſe that *a Leaſe* of 31 *years*, will be a very fair and reaſonable time, as any Tenant in this caſe can demand; whereby he ſhall have almoſt 10 pound *per Cent.* for his money, as you may ſee by the *Tables* of 10 pound *per Cent.* And theſe houſes, if well and ſtrongly built, according to the Act (by the bleſſing of God) will not be ſo ſubject to that great and common caſualty of Fire as formerly; and ſo the money laid out upon them will be ſo much the more

ſafe and ſure. Longer time than this I would wiſh none to allow; and the *Landlord* may well think this time too long, being forced (perhaps to make hard ſhift) to live upon the third *part* of his former rent *all* this while.

And therefore if the *Landlord* be any *way able*, it will be better for him to build himſelf, than grant longer *Leaſes:* or if the *Landlord* and *Tenant* joyn both together in building, then for every hundred *pound* laid out by the *Landlord*, he may require more rent by ten *pound a year* than the foreſaid ground rent: and for every hundred *pound* laid out by the *Tenant*, he is to *pay* the leſs rent by ten *pound a year* of what the former rent of the houſe *was*, and ſo to build upon *a Leaſe* of 31 *years*. This I conceive is *as fair and equal* terms *as* can be deſired on both ſides.

The third Caſe or Queſtion.

IS, Concerning controverſies between *Landlord* and *Tenant*, where there is engagements by *Leaſes*, either with fines or without fines.

Theſe caſes are much more difficult than the former, where there is no engagements; and

and if men ſhould exact and ſtand upon the rigour of the Law, many men might receive much wrong and damage; and therefore the honourable Parliament hath taken eſpecial care for the more equal and reaſonable regulating of theſe Controverſies. I ſhall not herein intrench upon their Office, neither can I bind any to follow my advice, any farther than they ſee it right and equal, and ſo by this means (perhaps) I may ſave them and others much pains and trouble, in hearing and pleading theſe controverſies.

In the firſt place, it muſt needs be granted, that by the rigour of the Law the Tenant may be enforced to build: for he being bound by his Covenants to Repair, ſupport, maintain, and uphold the houſe; and at the end or expiration of his Leaſe or forfeiture of the ſame to deliver the houſe unto his Landlord Repaired, ſupported, maintained, and upheld: how can he do this when the houſe is burned down, without new building the ſame?

And this, though it may ſeem very harſh in ſome caſes, yet it may thus be pleaded for.

Firſt, that no man will take a Leaſe of an houſe, and enter into the engagments, but he hath ſome reaſon or conſiderations

to encourage and provoke him thereunto, either by the worth of the peny-worth, or the conveniency for his *Trade* and *Living*, or to avoid the trouble and charge of removing, or some such considerations.

Secondly, no man doth take an house by *Lease*, but he must needs look to be at some cost and charges by ordinary *Reparations*, and many *Casualties* which may happen by Winds and Tempests, blowing down Chimneys and corners of houses, which I suppose men make no question but they are bound to repair.

Thirdly, were it not for these Covenants, many *Tenants* would neglect these reasonable and necessary *Reparations*, and suffer houses to go to ruine in a little time, to the great loss and damage of the Landlord.

Lastly and chiefly, many houses which belong to the City, and publick Societies, as *Halls*, *Hospitals*, *Colledges*, and such like, are usually let at a small Rent, and a moderate Fine, and it is very fit such Tenants should be bound to good *Reparations*. And this I suppose was the first beginning, and reason of these manner of Covenants: when Rents were low and reasonable, then men desired to have Leases of them, and were willing to be at the cost not only of repairing, but of re-building, and building

new

new Structures upon them. And so afterward, though rents did grow higher, yet *Landlords* would still tye men to the same *Articles and Covenants*, without any respect to the goodness and badness of the *Bargain: all* kind of *Leases* being generally made in the same form and words, which the Tenant in regard of the commonness thereof, binds himself thereunto, taking them only for words of course, without due consideration thereof.

But this is very unjust and unreasonable, especially where men pay great Rents, or buy them out with great Fines. For if *Landlords* could, and really and intentionally did so bind all their *Tenants*, then why should not Houses be valued at as high a rate as Land; whereas the undervaluing of houses is upon the account of the *charges* that may *happen* by these *casualties* and *dilapidations*. Now if the *Landlord* have his *allowance* for it in buying, then the *Tenant* hath no reason to be bound to stand to the cost and charges thereof, unless he be very well allowed for it in his Rent or Fine.

Besides, The *Landlords* must consider that their houses will grow old, and *Tenants* will not *alwayes* take them on these termes, but they must pull them down and build them many times at the expiration of their *Leases*.

Last-

Laſtly, In this general calamity wherein all men have too great a ſhare, it is not fit that any ſhould be unreaſonably oppreſſed, but that as near as may be, there may be an equality in the loſs and charges, that ſo the burden may be the more eaſily undergone by both parties, which is the intent of the Act of Parliament for this purpoſe.

Now the buſineſs is to propoſe ſome rules or directions how this may be done, which I ſhall do in two caſes, which will include moſt patticulars.

Firſt, where there is a great rent paid yearly, and but little or no fine.

Here let the charges of the houſe to be built be conſidered, and being known, let it be divided into three equal parts. One third part of theſe charges the Landlord may *pay*, becauſe (as I ſaid before) theſe houſes are allowed for in the buying and purchaſing thereof to be ſubject to caſualties, and thefore are ſold at 13 or 14 years purchaſe; whereas Land is ſold at 20 years purchaſe: ſo that they are a 3d. part cheaper than Land.

The other two thirds may equally be divided between the Landlord and the Tenant, and ſo the Tenant will be at one third part of the charges of the Building: upon theſe terms either the Landlord, or the Tenant may build, and the Tenant may take

a new *Leaſe* thereof at the former Rent, for 21 or 31 *years*; or elſe give up his whole right and intereſt to his *Landlord*, paying his third part toward the charges of the building, as they ſhall agree between themſelves.

This agreement (I ſuppoſe) will be very indifferent and reaſonable, for moſt perſons included in this caſe, eſpecially if the houſe was any thing ſtrong and good, and at any reaſonable rent: for the *Tenant* being bound, muſt not think to eſcape ſcotfree, though he would renounce his claim to the houſe: and where the *Tenant* hath a mind to claim any intereſt in the houſe, he cannot well deny to pay one third part of the charges of the Building. Likewiſe, the *Landlord*, though he pay two thirds of the charges, yet may conſider, that what the *Tenant* layes out is all loſt (as it were) unto him, and he ſhall not receive one peny of it again, but muſt ſtill keep on paying his rent as formerly: But the *Landlord* will be upon the receiving hand; and though his houſe may be ſo much the dearer to him, yet it ſtill yields him a good income of Rent.

The ſecond of theſe caſes is where the *Tenant* hath paid a conſiderable Fine, and ſo may be more ready and earneſt to make his claim of the *Landlord*; and yet alſo

payes a considerable rent, above the worth of the ground-rent.

In the deciding of this controversie, First, the *charges* of the building had best to be divided (as before) into three equal parts, and so the *Tenant* to *pay* one third *part* thereof, and the *Landlord* the other two: and so the *Tenant paying* the same rent as formerly, to enjoy it for the remainder of his *Lease*.

If the *Lease* be short, then according to the former fine, the *Tenant may* renew his *Lease*, and *make* it up 21 *years*. As for *example* Suppose *a Tenant* hath *paid* 100 *l.* for *a Fine*, for *a Lease* of 21 *years*, and nine *years* thereof *are* expired, and so 12 *years are remaining*.

For the *accounting* hereof you *may please* to *take* notice, that these Fines may be *made and allowed for*, according to the *Table* of 8 *per Cent.* which *allows* 10 *years purchase* for 21 *years*: by which reckoning 100 *pound* Fine cuts off 10 *pound a year* from the Rent; and so every 10 *pound* cuts off 20 *shillings*. Now this *Table* shews, that 1 *l.* for 21 *years* is worth 10 *l.* or 10 *years purchase*; and likewise that 1 *l.* for 12 *years remaining* is worth 7 *l.* 10 *s.* that is, 7 *years and an half purchase*: so that every 10 *l.* of the Fine which was paid for the

the whole 21 *years* is worth 7 *l.* 10 *s.* for the 12 *remaining years.*

Now then, *as* 10 times 10 *pound* makes an 100 *l.*

So ten times 7*l.* 10*s.* make 75 *l.*

Which taken out of 100, reſts 25 *l.*

So that there is 75 *l.* due to the *Tenant* of of his foreſaid Fine of 100 *l.*

Now if the *Tenant* will enjoy the houſe and have his *Leaſe* made up again to 21 *years*, at the ſame rent as formerly: then he muſt pay a third *part* of the *charges* of the building, and make up his Fine *again* 100 *l.* by adding 25 *pound* to the ſaid 75 *pound*, which makes it 100 *pound.*

But if the *Landlord* agree to buy out the *Tenant*, then the Landlord muſt allow the *Tenant* his 75 *pound* out of his third *part* of the *charges*, which the *Tenant* is to *pay* toward the building of the houſe.

And thus going by the *Table* of 8 *per Cent.* you may reckon what is to be allowed for any Fine, for any number of *years*, reckoning every 10 pound of the Fine for 21 *years* to be worth the ſum ſet againſt the remaining number of *years.*

Thus if there be but 5 *years* remaining of the *ſaid Leaſe*, againſt 5 *years* you find 3 *l.* 19 *s.* 10 *d.* that is almoſt 4 *l.* and ſo for every 10 *l.* of the Fine you muſt reckon

kon 4 *l.* which for the 100 *l.* comes to 40 *l.* So much being good to the Tenant of his former Fine.

This way and manner of reckoning and agreement, will I conceive be very fair and reasonable for both parties, if the *Lease* be made for no longer time than 21 *years.*

But if any *Tenant* that desires to build, would have a longer *Lease*, and will not agree upon these terms, but will have a *Lease* of 31 *years*, I would not wish the *Landlord* to stand off, and so hinder his house perhaps *a year* or two building; for there is not much above *a years purchase* difference between *a Lease* of 21 and 31 *years*; which in accounting the Fine, will come to much, and yet will be a great encouragement to the Builder.

Likewise, if any *Landlord* would engage his *Tenant* to lay out more than his third part or proportion; then for every 100 *l.* which the *Tenant* layes out more than his third part, the *Landlord* may well abate him 10 *l. a year* rent, upon *a Lease* of 21 *years*: yea, rather than hinder his building, he may abate so much upon *a Lease* of 31 *years*, provided the Rent remaining will counter-value the Ground-Rent, which I stated before to be a third part of the yearly Rent, reckoned at the full value:

For

For I ſhewed before, that any man (though he have no intereſt in the Ground) yet may build upon a Leaſe of 31 years, and pay one third part of the full rent of the houſe.

But all this which I have ſaid muſt be underſtood of ſuch houſes wher the Fines are ſo moderate, that they do not too much diminiſh the yearly rent: For in other caſes where men pay but 10. or 20 *l.* rent, for an houſe that is worth 40. or 60 *l.* there muſt be ſome other rules to direct you.

But theſe for the moſt part being ſuch as belong to the City or Companies, or ſome publick Rents; I make no queſtion but they will uſe their tenants much better than I can preſcribe them. What I write is for private perſons, that they may know the true value of things between man and man, and may more reaſonably demand it.

Only you may take notice of what I ſaid before, that if the yearly rent do not amount above the third part of the true worth thereof, then any one may venture to build upon a Leaſe of 31 years; eſpecially having hopes to renew his Leaſe hereafter at a reaſonable Fine.

And yet conſidering many of theſe Leaſes are looked upon, and have been formerly eſteemed as good as ſome Coppy-holds, having been let at low rents, and very reaſonable

ſonable Fines, I doubt not but the *Tenants* who have received the chief loſs hereby will find as much favour as formerly from their *Landlords*; ſo that whereas the *Parliament* in ſome caſes allows the Judges between man and man to give 40 *years* time, they will alſo be as forward and ready to give full encouragement and ſatisfaction to their *Tenants* to the utmoſt of their power.

And indeed ſuch *Tenants* who have lately paid a good round Fine, or have a very long time in their *Leaſe*; as many City-*Leaſes* which were lately inlarged to 60 *years*, (and have yet above 40 *years* in their old *Leaſes* already) will have all the loſs lie upon them, if they have no ſatisfaction and allowance given them from their Landlords, towards their charges in the building.

The laſt Queſtion about theſe Buildings will be concerning the coſt of the Party-Walls between houſe and houſe, what may be the plaineſt way of reckoning it up; ſo that every man may ſee what is his due to pay.

NOw to this purpoſe you muſt underſtand that Bricklayers uſe to reckon their work by the Pole, which is 16 foot &

an

an half ſquare every way, and 3000 of Bricks will make a Wall of a pole ſquare, of the thickneſs of one Brick, 4500 will make a Wall of a Pole ſquare, whoſe thickneſs ſhall be one brick and an half. And 6000 Bricks will make a Wall a Pole ſquare, whoſe thickneſs ſhall be 2 Bricks: ſo that if you know how many Pole there is in the Wall; by the thickneſs thereof you may know the number of the Bricks, and thereby the coſt of making thereof.

But this meaſuring by the Pole, though it may do well in a long Wall of a Garden or Park, yet in meaſuring of the Wall of an houſe is very inconvenient; and the parts thereof will not be ſo plain and exactly meaſured as by ſome leſſer meaſure; whereby you may more readily and exactly meaſure every ſtory in an houſe by it ſelf, according to the different thickneſs of the Wall.

Now, this I would adviſe to be done by the Foot, namely that you meaſure how many foot long, and how many foot high the Cellar is, and all the other Stories in the houſe, and then the following Tables will ſhew you (according to the thickneſs of the Wall) how many Bricks your neighbour is to pay for towards his Party-Wall. For which theſe two Tables, will very well

ſerve

ſerve for theſe Walls are to be made part of them 2 Bricks thick, part of them one and an half thick. Now where the Wall is 2 Bricks thick, there the Table of one Brick thick will ſhew the half thereof; and where the Wall is one Brick and an half thick, there the other Table of three quarters of a Brick thick, will ſhew the number of Bricks to be accounted for the half of the Wall.

Now knowing the number of the Bricks which go to the making of the Wall, you may eaſily reckon the coſt of the Mortar and Wormanſhip thereof, and ſo reckon up the coſt of the whole, which you will find to be about 30 *s.* for every 1000 of Bricks, Bricks being now ſomewhat dear, about 18 or 20 *s.* a thouſand.

Thus for example, Suppoſe an houſe of the biggeſt rate, the ſide-wall thereof being 30 foot long, and you would know how many Bricks are to be paid for towards the party-wall.

Firſt, meaſure the Cellar, where the wall is to be 2 Bricks thick, the length thereof is 30 feet, and the depth 7 feet, find this length in the ſide, and the depth in the top of the Table, and in the ſquare meeting of the Table for one Brick thick, you ſhall find 2314 Bricks are to be paid for.

Then

Then the first Story being likewise 30 foot long, and 10 foot high and also 2 Bricks thick, the same Table shews for the allowance for this, 3306

The second story is also 30 foot long, and 10 foot and an half high, but the Wall is to be but a Brick and an half thick; the half whereof is 3 quarters of a Brick: and this in the Table of 3 quarters of a Brick, yields for thirty foot long, and ten foot high, 2479

And for the half foot more in heighth 124

The third story is nine foot high, and 30 foot long, being likewise a Brick and half thick; and for this the Table shews the half to pay for, is 2231

The 4th. story is 8 foot $\frac{1}{2}$ high, and 30 foot long, for the eight foot the Table shewes 1983

And for the half foot 0124

All which added together, make 12559 which are to be paid for the half of the party-wall, which at 3 *s.* a thousand comes to 18 *l.* 16 *s.* 9 *d.*

Thus you may see what any party-wall comes to, though your Neighbours house joyns never so little or much to your house, more plainly and exactly than you can by measuring by the whole Pole.

And

And whereas the Floors of the ſeveral Stories adde ſomewhat to the height, you made add ſomewhat for them according as you find them in thickneſs.

Laſtly, for the Garrets, the Walls thereof being one Brick thick, you make take half the number in the Table of one Bricks thickneſs, and add it to the reſt of the account.

All the difference that can be between one neighbour another herein, will be about the price of the bricks, and the Lime and Workmanſhip, which at the preſent is very dear and uncertain, but if neighbours build together, they will eaſily determine it; if they do not, yet the firſt Builder is ſufficiently provided by his workman to teſtifie his coſt; and by the Act of Parliament is allowed full ſatisfaction, with intereſt from the time of his Building.

A Table for one Brick in thickneſs, or the half of two Bricks.

The Walls heighth in Feet.

Foot long.	½ Bricks	I Briks	II Briks	III Bicks	IV Bcks	V Bks
1	5	11	22	33	44	55
2	11	22	44	66	88	110
3	16	33	66	99	132	165
4	22	44	88	132	176	220
5	27	55	110	165	220	275
6	33	66	132	190	264	331
7	39	77	154	231	309	386
8	44	88	176	264	353	441
9	50	99	198	298	397	496
10	55	110	220	331	441	551
11	61	121	242	364	485	606
12	66	132	264	397	529	661
13	72	143	286	430	573	716
14	77	154	309	462	617	771
15	83	165	331	496	661	826
16	88	176	353	529	705	882
17	94	187	375	561	749	937
18	99	198	397	595	793	992
19	105	209	419	628	837	1047
20	110	220	441	661	882	1102
21	116	231	463	694	926	1157
22	121	242	485	726	970	1212
23	127	253	507	760	1014	1267
24	132	264	529	793	1058	1322
25	138	275	551	826	1102	1377
26	143	286	573	860	1146	1432
28	154	309	617	926	1234	1543
30	165	331	661	992	1322	1653
40	220	441	881	1322	1763	2204
50	275	551	1102	1652	2204	2755

A Table for one Brick in thickneſs, or the half of two bricks.

The Wall feet in height.

Foot long.	VI	VII	VIII	IX	X
	Bricks	Brick	Bric.	Bric.	Bric.
1	60	77	85	99	110
2	132	154	176	198	220
3	198	231	264	298	331
4	264	309	353	397	441
5	331	386	441	496	551
6	397	463	529	595	661
7	463	540	617	694	771
8	529	617	705	793	882
9	595	694	793	893	992
10	661	771	882	992	1102
11	727	848	970	1091	1212
12	793	926	1058	1190	1322
13	859	1003	1146	1289	1433
14	926	1080	1234	1388	1543
15	992	1157	1322	1488	1653
16	1058	1234	1410	1587	1763
17	1124	1311	1499	1686	1873
18	1190	1388	1587	1785	1983
19	1256	1466	1675	1884	2094
20	1322	1543	1763	1983	2204
21	1388	1620	1851	2083	2314
22	1455	1697	1939	2184	2424
23	1520	1774	2028	2281	2534
24	1587	1851	2116	2380	2645
25	1653	1928	2204	2479	2755
26	1719	2006	2292	2578	2865
28	1851	2160	2468	2777	3085
30	1983	2314	2645	2975	3306
40	2645	3085	3526	3967	4408
50	3306	3857	4408	4959	5510

A Table for 3 quarters of a Brick thick, being the half of a Brick and an half.

The Wall foot high.

Foot long.	½ Brick	I Brick	II Brick	III Brick	IV Brick	V Brick
1	4	8	17	25	33	41
2	8	17	33	50	66	83
3	12	25	50	74	99	124
4	17	33	66	99	132	165
5	21	41	83	124	165	207
6	25	50	99	149	198	248
7	29	58	116	174	231	289
8	33	66	132	198	264	331
9	37	74	149	223	298	372
10	41	83	165	248	331	413
11	45	91	182	273	364	455
12	50	99	198	298	397	496
13	54	197	215	222	430	537
14	58	116	231	247	463	578
15	62	124	248	272	496	620
16	66	132	264	297	529	661
17	70	140	281	321	562	702
18	74	149	298	445	595	744
19	79	157	314	471	628	785
20	83	165	331	496	661	826
21	87	174	347	521	694	868
22	91	182	369	545	727	909
23	95	190	380	570	760	950
24	99	198	397	595	793	992
25	103	206	413	620	826	1033
26	107	215	430	645	860	1074
28	116	231	463	694	926	1157
30	124	248	496	744	992	1240
40	165	331	661	992	1322	1653
50	207	413	826	1240	1653	2066

A Table for 3 quarters of a Brick thick, being the half of a Brick and an half.

The Wall foot high.

Foot long.	VI Brick	VII Brick	VIII Brick	IX Brick	X Brick
1	50	58	66	74	83
2	99	116	132	149	165
3	149	174	198	223	248
4	198	231	264	298	331
5	248	289	331	372	413
6	298	347	397	446	496
7	247	405	463	521	579
8	297	463	529	595	661
9	446	521	595	669	744
10	496	579	661	744	826
11	545	636	727	818	900
12	595	694	793	893	992
13	645	752	860	967	1074
14	694	810	926	1041	1157
15	743	868	902	1117	1240
16	793	926	1058	1119	1322
17	843	983	1124	1264	1405
18	893	1041	1190	1339	1488
19	942	1099	1256	1413	1570
20	992	1157	1322	1488	1653
21	1041	1215	1388	1562	1736
22	1091	1273	1455	1636	1818
23	1140	1331	1521	1711	1901
24	1190	1388	1587	1785	1983
25	1240	1446	1653	1860	2066
26	1209	1504	1709	1934	2149
28	1338	1620	1851	2083	2314
30	1488	1736	1983	2231	2479
40	1983	2314	2625	2975	3306
50	2479	2893	3306	3719	4132

A Table of Proportions for Brick Walls, in the building of all sorts of Houses in the City of London, according to the Act of Parlement

The sorts of Houses.	Several Stories	Foot in height	The thickness of the Party-Walls between house and house.		The thickness of the Walls of each house in Front and Rear.	
			B. length in thick	S. length in thick	B. length in thick	S. length in thick
The first or least sort of Houses, fronting bye-Streets and Lanes are to have.	Cellars	6½	2	1½	2	1½
	1 Story	9	2	1½	1½	1½
	2 Stories	9	1½	1½	1½	1½
	Garrets		1		1	
The second sort of Houses fronting lesser Streets, and Lanes of note, and the Thames side are to have.	Cellars	6½	2½	1½	2	1½
	1 Story	10	2	1½	2	1½
	2 Stories	10	1½	1½	1½	1½
	3 Stories	9	1½	1½	1½	1½
	Garrets		1		1	
The third sort of Houses fronting the high Streets are to have.	Cellars	The depth of the Cellars, and heights of the several Stories.	2	1½	2	1½
	1 Story	10	2	1½	2	1½
	2 Stories	10½	1½	1½	1½	1½
	3 Stories	9	1½	1½	1½	1½
	4 Stories	8½	1		1	
	Garrets					

THE Purchaſers Pattern.

IN the buying and ſelling of Land, and in the letting and taking of *Leaſes*, either of Land or *Houſes*, there *are* many things very conſiderable, which may all be reduced to theſe three general heads.

Firſt, To the Law, to make the bargain ſure

Secondly, To Reaſon and Judgment, to know the nature of the thing you *purchaſe*.

Thirdly, To Arithmetick, to find out the true value thereof.

My chief purpoſe herein is to ſpeak of this laſt, referring you in the other two, to your own judgment, and the counſel of others: yet becauſe I am loth to let thoſe who need ſome inſtructions herein, and will be willing to learn, go altogether without, I ſhall briefly ſpeak ſomewhat to each of theſe.

And in the firſt place, as to matter of Law, take it as I find it ſum'd up in theſe few verſes.

Firſt, ſee the Land which thou intend'ſt to buy
Within the Sellers title clear doth lie;

And that no woman to it doth lay claim,
By Dowry, Joynture, or ſome other name,
That may it cumber. Know if bound or free
The Tenure ſtand, and that from each Feoffee,
It be releas'd. That th' Seller be ſo old,
That he may lawful ſell, thou lawful hold.
Have ſpecial care that it not morgag'd lie,
Nor be intailed on Poſterity.
Then if it ſtand in Statute, bound or no:
Be well adviſ'd what quit-rent out muſt go,
What Cuſtom-ſervice hath been done of old
By thoſe who formerly the ſame did hold.
And if a wedded woman put to ſale,
Deal not with her, unleſs ſhe bring her Male:
For ſhe doth under Covert-baron go,
Although ſometimes ſome alſo traffique ſo:
Thy bargain being made, and all this done,
Have ſpecial care to make thy Charter run
To thee, thine Heirs, Executors, Aſſigns,
For that, beyond thy life, ſecurely binds.
Theſe things fore-known, and done, you may prevent,
Thoſe things raſh buyers many times repent.
And yet when as you have done all you can,
If you'l be ſure, deal with an honeſt man.

Much might be ſaid to this in point of law; but neither my skill nor time will afford it. It is the beſt way for every one, not to truſt too much to his own skill, but to uſe the

the help of ſome skilful Lawyer, and knowing Scrivener. And I ſhall only adde this, that though the man you deal withal, have the repute of an honeſt man, yet truſt not too much upon that; but be careful to have all the aſſurance made unto you, as if he were your utter enemy, or a very K.

IN the ſecond place, before you can know the true value of the thing to be *purchaſed*, you muſt well conſider the nature of the thing, and the caſualties that it may be ſubject to; and ſo according to the goodneſs and certainty thereof, you muſt caſt up the price at a greater or leſſer rate of profit

And to this purpoſe in the firſt place, take notice, that the Rate allowed for Intereſt money, is the general ground and rule to eſtimate the value of any *purchaſe* by.

This was formerly in Queen *Elizabeths* dayes allowed to be 10 pound for an 100. But in King *Jame*'s time, it was, upon very good ground brought down to 8 pound for an 100. And now of late it is allowed to take but 6 pound Intereſt for an 100. Now as the Intereſt of money falleth, ſo the price of all kind of *purchaſes* riſeth. This you may ſee in the following Tables. And it muſt needs be ſo, becauſe the leſs profit is allowed, the greater principal muſt be

expended to bring in the ſame profit.

Thus when mony was at eight in the 100, then 75 pounds would bring in ſix pounds a *year*, *whereas* money being but at ſix in the 100, an 100 pounds will bring in but the ſaid 6 pounds a *year*.

But yet you muſt not think that this *rate* allowed for Intereſt money, is the abſolute rule of *all Purchaſes*; but as *formerly*, when money went at 8 for an hundred, yet Land was *worth* 18 *years Purchaſe*: ſo now mony is at 6 for the hundred, land is well *worth* 20 *years purchaſe*. And though men who thus lay out their money upon Land, have but five in the hundred profit for their mony; yet there may be good reaſons given, why men ſhould be willing ſo to do. As,

Firſt, Becauſe though every thing be ſubject to caſualty in this *uncertain world*, yet an eſtate in Land is leſs ſubject to danger, and of more ſure continuance both for a mans own life, and his poſterity after him.

Secondly, It hath been hitherto, and it is like to be ſo ſtill, that the price of money falls cheaper, and the price of *Land* riſeth *dearer*, and that not only (as I ſaid before) in *proportion* to the *rate* of Intereſt, but in reſpect of the value of the things themſelves; in ſuch wiſe, that a Farm that formerly

merly *was worth* but 30 pounds *a year*, is now *worth* 50 *pounds*, or more. So that the old Rents of Land, may in a ſhort time be much improved, whereby the Land-Lord may in a ſhort time mend his bargain, if it be any good penny-worth when he bought it.

Thirdly, In point of Piety, many men had rather lay out their money in *Land*, though with leſſer profit; than let it out to Intereſt: Becauſe Uſury, through the ill practices of many, hath gotten ſuch an odious name, and been ſo generally condemned by many godly men.

Fourthly, there is much equity herein. For as men who have greater Stocks, and Trade by whole-ſale, may live upon a leſſer *rate* of profit than thoſe who have but ſmall Stocks, and Trade by Retail: So men who have great Eſtates, to buy Land therewith, may very well lay out their money at leſs profit than other men, and yet live better thereof. Thus *a man that hath* 4000 *pounds*, *may purchaſe* therewith 200 *pounds a year*, and may live better thereupon, though he have but five pounds in the 100 profit for his money; then he that hath an Eſtate of 1000 *pounds* in money, and puts it out to Intereſt at ſix pounds for an hundred, can live of 60 *pounds* the year-

by Intereſt thereof. And hereupon the Emperor *Juſtinian* made a Law that Noble Men and Earls ſhould take but 4 pounds Intereſt for 100. Artificers might take 8 pound; Merchant Adventurers 12 pounds, and other men 6 pounds in an hundred.

And thus much for the price of Land in general. Here in *England* it is worth 20 *years purchaſe*. In other Countries, where money is plenty, and land ſcarce, it may be worth more; as in *Holland* land is worth 30 *years purchaſe*, and money ſcarce worth 3 or 4 *per Cent*. But in many other places it is worth leſs. Yea, as I am informed in *Lincoln-ſhire* very good land is ſold for 15 or 16 *years purchaſe*: theſe things the buyer and ſeller muſt conſider of, and do therein, as their own judgment, and their occaſions, and opportunies offered, allow them the beſt bargain.

IN the next place it may be conſider'd, after what rate Leaſes of Land are fitteſt to be let. And that is according to the preſent rate of Intereſt money, whatever it be; whether 5, 6, 7. or 8 in the hundred.

For firſt, its not fit that they ſhould pay more then their money will yeild them; becauſe for the moſt part ſuch Purchaſers are men of ſmaller Eſtates, and ſuch as for the

the moſt part, do with much care, coſt, and pains, get their Rent for their Land-Lords, who live many times at eaſe; and if their Land-Lord think they have too good a peny-worth, he wants not power and will to make him pay more for his next Bargain.

On the other ſide, it is not fit that theſe Leaſes ſhould be let at any under rate, both becauſe they are certain, and leſs hazard therein then in laying out their money any other way: and alſo, becauſe the Land-Lord himſelf gives a dearer rate; and ſo would hereby be too much damnified. And after this rate you muſt value all other Annuities which are certain, and aſſured by Lands.

THe next thing I ſhall propoſe to your conſideration, is the rate which is to be obſerved in letting and ſelling of houſes. And herein it will be very requiſite to conſider of the many Caſualties Houſes are ſubject to.

As firſt from the Air, they are continually weather-beaten; and ſometimes, by extraordinary winds and tempeſts, much rent and torn; ſo that in a ſhort time they run to decay, if they be not continually kept in good repair.

Secondly, From the water likewiſe they receive continual damage, even by the ordinary ſhowers of rain, which are ſubject to ſoke in, and rot, and ſpoil them, if not carefully prevented: and many times alſo extraordinary floods and inundations deſtroys them in a moment.

Thirdly, Though this deſtruction by water need not much be feared in many places, yet fire may be juſtly feared in all: which, if it once get the maſtery, is a mercileſs enemy; and this it doth too too often, and is not to be prevented by all our own care and watchfulneſs, proceeding many times from the careleſneſs of a Neighbour, or an idle ſervant.

Fourthly, The Earth it ſelf, though it be their beſt friend, and for the moſt part upholds them; yet many times for the ſins of the Inhabitants it trembles under them, throws them down, or ſwallows them up. By this means, whole Cities are ſometimes deſtroyed in an inſtant: and though this ſeldom happens in our Iſland, yet in Queen *Elizabeths* days there were three of theſe Earthquakes; and though, bleſſed be God, they did no great hurt, yet ſome they did in this particular.

But paſſing by all theſe petty and extraordinary Caſualties, othere is one more which,

which in my mind, is more to be conſider-ed than all the reſt; and that eſpecially, if a man buy an houſe not for his own uſe and habitation, but to let it out to others. And that is, that many times a man ſhall meet with an ill *Tenant*, that will ſcarce pay his Rent; and ſometimes it may ſtand empty without *a Tenant*, and ſo bring in no profit at all; and alſo hereby it runs more ſpeedi-ly to ruine. And this caſe is ſo much the more conſiderable, becauſe it is ſo ordinary and for this very reaſon, an houſe that ſtands void, is not *worth* ſo much by at leaſt *a years purchaſe*, as another houſe that hath a good *Tenant* in it; and it is ſo much the worſe if the houſe ſtands not in a good place, where it is like to be long without a *Tenant*: howſoever *a year* is quickly gone, *and a year* loſt at the beginning, is *worth* as much as three or four afterward.

All theſe things, though men do what they can to prevent them, and ſhift them off from themſelves by Fines and Leaſes; yet they muſt needs fall either upon the Land-lord or the *Tenant*, and many times fall heavy enough upon both.

For theſe and ſuch like reaſons, it was the uſual cuſtom, when money was at eight in the hundred, to let Leaſes of Houſes of 21 *years*, for 7 *years purchaſe*. By which rec-

koning (as you may ſee by the Tables following) they allowed about 13 in the hundred for the profit of their money to the buyers. For in the Table of 12 in the hundred, one pound yearly rent for 21 *years*, is worth 7 pounds, 11 ſhillings, 2 pence, which is above 7 *years and an half purchaſe*, therefore bare 7 *years purchaſe* yields more profit, and is much about 13 in the hundred.

Now if this rate of 12 or 13 *per Cent.* profit were thought fit when money was at eight in the hundred; then, now money is at ſix, ſuch Leaſes may very well be let after the rate of ten in the hundred. And ſo one pound yearly rent to continue 21 *years* is worth 8 pounds, 12 ſhillings, and 11 pence; that is, 8 *years and an half*, and ſomewhat more *purchaſe*. And this I ſuppoſe to be the fitteſt rate for moſt ordinary houſes.

But yet ſince ſome houſes being new and ſtrongly built, need little or no reparations; and others, being old and decayed, need great and coſtly *reparations*, and many times muſt be partly new built, ſince thoſe things lie commonly upon the Tenant, the better ſort of houſes will be worth more, and the other leſs. So that the prizes of all theſe Leaſes of Houſes may be reckoned

koned after the *rates* of 8, 9, 10, or 12. *per Cent.* as the aforeſaid caſualty ſhall require.

And to conceal nothing from you in this point; the chief thing to be looked upon in this particular, is whether the *yearly rent* of the houſe be *rated* at ſuch an eaſie *rate*, that the houſe is very well worth it, and will yield *rather* more than leſs: in this caſe the houſe may be *worth a year or* two *years purchaſe* more than otherwiſe. But if the houſe be *rated* according to its utmoſt value, it will be a *dear* penny-worth to give above the *rate* of 10 *per Cent.* for it.

It may *perhaps* be objected againſt this, the great coſt which men are at in building of houſes, ſo that if Leaſes of them yield no better *rate*, thoſe who *are at* the coſt to build them, will ſcarce have five or ſix in the 100 for their money laid out upon them.

To this may be replyed, that Houſes *are* things from whence the Tenant for the moſt *part*, receiveth little or no profit, being chiefly ſleeping holes to defend them from the injury of the weather: for which purpoſe many times leſs coſtly houſes would ſerve the turn. And therefore whatever men may lay out upon the building and beautifying of them, for their own pleaſure and accommodation, yet it will be the *part*

of

of every wiſe builder, to lay out no more thereon, than is fitting and neceſſary, according to the place it ſtands in; that ſo the *yearly* rent may bring in ſome conſiderable profit, at leaſt to the *rate* of eight in the hundred.

As for publick Buildings, either for ſtrength or ornament, they are not to be meaſured by ſo private a Standard.

Alſo if any well-affected perſons, *or Corporations*, having ſtocks of money lying by them, ſhall build in convenient places, *or* Towns waſted by fire, houſes ſomewhat above the degree aforeſaid; ſuch men, though they receive leſs profit, yet they deſerve more praiſe.

But as for thoſe that lay out ſo much upon their private Houſes, that many times they would be glad to ſell them again for half their coſt, they may thank themſelves for their loſs, and may well be accounted fooliſh Builders, that did not conſider beforehand, whether their gain would countervail their Charges.

By what hath been ſaid, you may perceive that Leaſes either of Land or Houſes are the moſt profitable Tenures for the ordinary ſort of men, But yet you may deſire to know whether an ordinary Leaſe of 21 *years*, or a longer Leaſe of 40, 50, or 60 *years* be beſt.

I ſtart this queſtion, to lay open the errour of many men, who proceed in theſe Bargains without ſufficient knowledge in point of art. And from hence it is that one concludes that *a ſhort Leaſe* is moſt profitable, which he thinks thus ſufficiently proved.

Saith he, Suppoſe a man hath 1000 *pounds* to beſtow upon *a Leaſe*, if he will *purchaſe a Leaſe* of 100 *years*, it will coſt 13 *years purchaſe* at the leaſt: ſo your 1000 *pounds* will buy but 77 *pounds a year*, which doth not amount to the Uſe of your money after the rate of eight in the *hundred*: Whereas, if you will buy *a Leaſe* of 21 *years*, you may have it for *ſeven years purchaſe*, (money being at the foreſaid rate) ſo your 1000 *pounds* will *purchaſe* you *a Leaſe* of 140 *pounds a year*, which is 60 *pounds a year* more than the Uſe of your money will come unto. So that in the longer *Leaſe* you will loſe three *pounds a year*, and by the ſhorter *Leaſe*, you will gain *threeſcore pounds a year*; more than your money will yield at Intereſt.

This reckoning, I confeſs, is true according to theſe erroneous rules, by which moſt men make their bargains: and ſo for want of better knowledge, oftentimes run themſelves into very great damages. The chief cauſe

cauſe whereof proceeds from mens ſetting too low a price & value upon a ſhort *Leaſe*, and too high a price and eſteem upon a long *Leaſe*, which is only for lack of Art. And perhaps men may be deceived herein, reaſoning thus with themſelves. If a man gives 7 *years purchaſe* for *a Leaſe* of 21 *years*, it is 7 *years* before he receives his principal money again, and then he hath but 14 *years* more for the increaſe thereof, and in all the 21 *years* he receives his money laid out but three times over: Whereas, a man giving 13 *years purchaſe* for *a Leaſe* of 100 *years*; though it be 13 *years* before he receive his principal in again, yet then he hath 87 *years* of clear profit, and in the whole 100 *years*, receives his money laid out almoſt eight times over.

But this reaſon deceives men in conſidering too much of the often return of the money, and too little of the length of the time. For he that hath *a Leaſe* of 21 *years*, for ſeven *years purchaſe*, it is true, he can in that 21 *years* make but a threefold return of his money: but then after thoſe 21 *years* he may make ſuch another bargain for 21 *years* more, and ſo return his money three times more, And ſo continuing to do, in 105 years he may return his principal laid out 15 times over, ten times whereof will be clear

clear gains: whereas the other ſhall gain little more than half ſo much.

Thus you ſee, if you count aright, it is manifeſt, there is a very great diſ-proportion between the price of the long *Leaſe*, and the price of the ſhort *Leaſe*; which ought not to be ſo. For what reaſon is there but that a man ſhould have as good a penny-worth in a long *Leaſe*, as in a ſhort one: And I ſuppoſe the intent both of buyer and ſeller is that it ſhould be ſo: but all the fault lies in thoſe falſe rules and cuſtoms, which may with much right and reaſon be amended by Art.

The truth therefore is, the ſhort *Leaſe* is much undervalued; and the long *Leaſe* is much over-valued. For in the ſhort *Leaſe*, the buyer hath after 13 in the hundred allowed him for the profit of his money; whereas in the long *Leaſe* he hath not after 8. And the reaſon of this over-valuing the long *Leaſe*, is either for want of skill, or conſideration what the mony in that time, at Intereſt upon Intereſt will come to. Indeed all men have not time or skill to caſt it up; and there is much want of *Tables* of ſufficient length for this purpoſe, moſt *Tables* not exceeding 31 *years*. And this was the chief reaſon of my writing, and therefore I have inlarged my *Tables* to 100 *years* apiece,

apiece: yet not all in ſingle *years*, becauſe the difference would be but ſmall, in many of the *years*, and may be ſupplied well enough by eſtimation and proportion.

Now by theſe *Tables* you may plainly ſee, that however men mayeſteem of a long *Leaſe*, yet in moſt of theſe *Tables*, a *Leaſe* of 100 *years* is worth but little more *than a Leaſe of* 60 *years*; and *a Leaſe of* 60 *years* is worth but little more *than a Leaſe of* 31 *years*.

As for *Example*, in the *Table* of ten in the 100, the price of one *pound* to continue

Twenty one years is,	8 *l.*	12 *s.*	11 *d.*
Thirty one years,	9	9	7
Threeſcore years,	9	19	4
And 100 *y. not full*,	10	0	0

But you will ſay, this is very ſtrange, and few men think ſo.

I grant it, but the reaſon hereof is, becauſe men do not conſider the profit which their money may yield them in ſo many years. For though it be not allowed to take ten in the hundred *yearly* for money, yet thoſe who have any employment for their money otherwayes, may very well make at leaſt ten in the hundred of it: and after this reckoning, one pound in 60 *years* will come to 300 *pounds*, and in 100 *years* to 13781 *pounds*; and on the other ſide, the Reverſion

ſion of one pound 60 years hence, at this rate, is not worth a penny, and at 100 years hence, it is not worth the fourteenth part of a farthing.

By this you may ſee there is great need of Art, which like an equal Umpire, between man and man, may declare the true value of any leaſe for any time; ſo that one bargain ſhall not be too dear, and another too cheap, but each have a due proportion to the time of years; and ſo in this reſpect, there is no more advantage or profit in one kind of Leaſe more than in another. But he that will not be ruled by Art, but will follow theſe, or ſuch like falſe Rules, muſt (you ſee of neceſſity) either wrong himſelf or others, yea, and before he is aware, may wrong himſelf as ſoon as another, either in buying or ſelling ſuch bargains.

In anſwer therefore to this queſtion; this falſe concluſion and unjuſt practice being taken away, ſo that a man may have as good a penny-worth in a long Leaſe, as in a ſhort Leaſe; it will plainly appear, that a long Leaſe for the moſt part is the beſt (at leaſt) for the Tenant. For ſuppoſe it be a leaſe of Land, the Tenant having a long Leaſe, may, and will ſtrive to improve it what he can, becauſe he is in hopes long to enjoy it, & receive the benefit thereof. And

all

all this will be no great hurt to the *Landlord*, unleſs he be too greedy after great Fines, or loves alwayes to be raiſing his *Tenanes* rent, and ſo many times as they impoveriſh their *Tenants*, their *Tenants* impair their *Land*.

Indeed for *Leaſes* of Houſes the caſe is more difficult, for they many times cannot well ſtand out a long *Leaſe*; but yet if a man muſt take ſuch an houſe that will require new building, either in whole or in part, he had better then have a long *Leaſe* thereof, that ſo he maythe longer and more certainly enjoy it, after his coſt and pains beſtowed upon it.

On the other ſide, when a man hath a ſhort *Leaſe* either of *Land* or an *Houſe*, he dares not do what he would to improve it, leſt his Rent ſhould be raiſed, or he turned out by the greedy covetouſneſs of his *Landlord*, or the envious greedineſs of ſome evil neighbour.

If any one hath an ill bargain of theſe long *Leaſes*; it is the *Landlord*; and that is not ſo much becauſe he ſhall receive ſo few Fines, but rather by his taking too great Fines of his *Tenants*, and ſo by the Fine to cut off ſo much the more of his yearly Revenue.

For you ſee that for all the money the *Land-*

Landlord receives for the Fines of thoſe *Leaſes*, he rebates his *Tenant* for it, not only after the rate of ſimple Intereſt, but at Intereſt upon Intereſt, at ſix, eight, or ten in the hundred, whichyou ſee increaſeth ſo faſt in 50 or 60 *years*, that it eats out almoſt all the principal Rent, and makes the latter half of the *years* to increaſe ſo little in value.

It is the beſt way therefore for *Landlords*, in theſe *Leaſes*, not to take over great Fines, but ſuch as may be only ſufficient to binde their *Tenants* to keep to their bargains, and make them careful to perform their Covenants, leſt they forfeit their *Leaſes*, and loſe their Fines. And this is the beſt and moſt politick end of theſe manner of Fines. And this will be beſt for the *Tenant*, and no hurt to the *Landlord*.

THere is one queſtion more about the buying of Houſes, and that is, that if ſuch long *Leaſes* of them do yield no more, what may be the value of them to buy them out right?

To judge the better of this, you muſt conſider the ſtrength and goodneſſe of the houſe, and the Materials of which it is built; whether Timber, Brick, or Stone; In which reſpects ſome houſes are able to ſtand

ſtand many ſcores (if not ſome hundreds) of *years* more than others, and when it comes to be pull'd down, theſe materials may be worth ſomewhat, or ſerve to the new building thereof again. Now he that hath only a Leaſe (though it be a long Leaſe) yet he hath none of this profit, but is bound to be at charge to uphold and maintain it in good order as it was delivered to him.

Again, ſuppoſe theſe things are little worth, yet the very ſpace and quantity of ground whereon the houſe ſtands, may in many places be very conſiderable, inſomuch that it is ordinary for men to build upon a Leaſe of 31 years, and yet pay a good reaſonable Rent to their Landlord beſides. Upon theſe accounts, the purchaſe of an houſe out-right, may well be worth two or three years purchaſe, more than a Leaſe of an hundred years. So that though the Leaſes be not worth above 10 years purchaſe: yet the Fee-ſimple of an houſe may be worth 12 or 13 years purchaſe.

THere is another thing ſomewhat conſiderable in the buying of Land and Houſes, and that is the Taxes which for the preſent lie heavy upon them. But this I hope by Gods bleſſing in a ſhort time will be taken

ken off, ſo that it will be needleſs to give any rules about it. Yet to ſatisfie men in this, I ſhall ſet down this rule briefly, Firſt, the taxes being known what they come to *yearly*, may be ſubſtracted from the utmoſt *yearly value* of the *Land or Houſe*; and ſo what remains, you may ſafely *purchaſe* according to the rules *aforeſaid*.

Yet ſince they may be taken off in good time, I would wiſh no man to be over-haſty to ſell thus; but at leaſt to divide the burthen of theſe Taxes, between his Cuſtomer and himſelf.

THere is another way of *purchaſing Land or Houſes*, by buying Lives therein, and this is the ordinary rule for it. One life in any thing is accounted of equal worth to *a Leaſe of ſeven years*. Two Lives are worth as much as *a Leaſe of 14 years*. Three lives are worth as much as *a Leaſe of 21 years*. And ſo ſtill increaſing by *ſeven years for every Life*,

But this way of reckoning ſeems to me ſomewhat *unequal*, ſince one or two may live as long as eight or ten, why ſhould there be ſo great a difference accounted? I confeſs a mans life is very uncertain, and therefore I would wiſh every one to take heed how they deal in ſuch a way of purchaſing.

chasing: but yet considering on the one side, that by this means one is provided for, as long as he lives, and when he is dead he need take no care : and on the other side, that if he be any thing young, or likely to live at all, he may live 20 or 30 *years*, what reason is there that the seller should be at so much hazard, as to venture 30 to 7 for a single life.

Again, though two are better than one, and *A threefold Cord is not easily broken*, yet it is not altogether so in mens lives, but many times three or four may die sooner than one; herein the Buyer runs some hazard, which though with more reason than the Seller before, yet it is fit he should have some consideration for it.

Therefore in my mind it were more equal, if a single life were rated as a *Lease* of 12 *years*, or ten at the least, and so for any more lives to decrease one *year* for every life. And so they will be worth, as in this little Table.

1	*Lives are of equal worth to a Leaſe of theſe Years, according to the foreſaid Rules and Tables.*	12	10
2		23	19
3		33	27
4		42	34
5		50	40
6		57 *Or*	45
7		63	49
8		68	52
9		72	54
10		75	55
11		77	
12		78	

Thus much for theſe pre-conſiderations: I ſhall now ſet the *Tables* before you, ſhewing you the true value of any thing according to the true Rules and Rates.

But in the firſt place, I ſhall ſet before you the manner of the conſtruction and calculation of theſe tables, that ſo I may leave no juſt exceptions againſt what I have ſaid or ſhall ſay in this point.

The beſt and moſt artificial way to make theſe *Tables*, is to find certain numbers in continual proportion decreaſing, according to the rate of the Intereſt propounded, which numbers may ſhew the true worth of one pound principal at the end of any number of *years*. And then by addition of all theſe numbers one to the others, the foreſaid

ſaid *Table* of *Purchaſes* from *year to year* is produced, which becauſe they come out all in *Decimals* of *pounds*, you may afterward reduce into *pounds*, *ſhillings* and *pence*.

Thus let the rate of the Intereſt propounded be 6 in the 100, theſe numbers will be thus found.

As 106 *l. to* 100 : *So* 1 *l. to* 0,9434.

You may increaſe theſe fractions as far as you will for the more exactneſs. And thus much is 1 pound worth at the end of one *year*.

Then for the ſecond *year*.

As 106, *to* 100 : *So* 9434. *to* 8900. which is the worth of one *pound* at the end of two *years*, ſo theſe two added together make 1, 8334, which is the worth of one pound Annuity to continue two *years*.

So again do for the third *year*.

As 106 *to* 100; *So* 8900, *to* 8396. which added to the former makes 2, 6730, which is the value of three *years*.

And ſo you muſt dō for every other *year*, as long as you make your Table for.

As you may ſee by this ſhort Table of 7 years at 6 in the hundred.

The decreaſe, or worth of the Reverſion.		*The worth of the Purchaſe by Addition.*
1	,9434	0,9434
2	,8900	1,8334
3	,8396	2,6730
4	,7921	3,4651
5	,7472	4,2123
6	,7050	4,9173
7	,6651	5,5824

Thus there is nothing difficult, but only the reducing of their numbers into the more known value of pounds, ſhillings, and pence, which may be performed by this Table.

Note that I have abreviated this Table to four places, conſidering this will be ſufficient exactneſs, ſhewing the true value of one pound to the tenth part of a farthing; and it is ſo much more eaſie in many other propoſitions, which I have ſhewed to be wrought thereby. Alſo to make it more ready for you, I have ſet down the fractions from a farthing to a ſhilling in ſingle farthings.

A Table of Decimal Fractions, shewing the proportion of any number of Shillings, Pence, or Farthings to a pound; the pound being divided into 10000 parts.

ll.	parts.	d.	q.	parts.	d.	q.	parts.
19	9500	11	3	0490	5	3	0240
18	9000	11	2	0479	5	2	0229
17	8500	11	1	0469	5	1	0219
16	8000	11	0	0458	5	0	0208
15	7500	10	3	0448	4	3	0198
14	7000	10	2	0437	4	2	0188
13	6500	10	1	0427	4	1	0177
12	6000	10	0	0417	4	0	0167
11	5500	9	3	0406	3	3	0156
10	5000	9	2	0396	3	2	0146
9	4500	9	1	0385	3	1	0135
8	4000	9	0	0375	3	0	0125
7	3500	8	3	0365	2	3	0115
6	3000	8	2	0354	2	2	0104
5	2500	8	1	0344	2	1	0094
4	2000	8	0	0333	2	0	0083
3	1500	7	3	0323	1	3	0073
2	1000	7	2	0312	1	2	0063
1	0500	7	1	0302	1	1	0052
		7	0	0292	1	0	0042
		6	3	0281	0	3	0031
		6	2	0271	0	2	0021
		6	1	0260	0	1	0010
		6	0	0250	0	0	0000

Or if you like not these decimal Fractions, you may reduce the *one pound* into pence, or farthings, and *work as before*. Thus if in pence. 44

As 106 l. to 100 l. so 240 d. to 226 d. 106

Which reduced into shillings and pence, is 18 shillings. 10 pence, 2 farthings, *fere*.

Or if you reduce the 20 shillings into farthings, 70

As 109 l. to 100 l. so 960 q. to 905 q. 106

Which reduced, is as before 18 shillings, 10 pence, 2 farthings, *fere*.

But in this if you proceed to make the Table for many years, you must have some respect to the fraction left; which is best by adding a cypher or two to the Dividend, and so they will come into tens or hundred parts of a penny or farthing.

Now these Tables of Reversion being added together, make up the Tables of purchase. But I have not expressed these Tables of Reversion; because I have made little use of them, only in making the other Tables. If any would make use of them, or any part of them, they may easily take them out of the Tables of purchase by Substraction, as I shall shew in its place.

But because this way of calculating these Tables, is very tedious, and subject to errour, by reason of the many divisions and

additions, if there be not great care had there in: and one fault herein may produce many: thoſe who have skill in the uſe of Logarithms may thereby find out the true value of any thing for any number of years, without reſpect had to the former years, which will be a ſhorter way, and ſerve as a proof to the Tables, in caſe of any doubt

As now for example.

Let it be required to know the true value of a Leaſe of Land to continue ſeven years after the rate of ſix in the hundred.

Firſt, take the Logarithm of 100, from the Logarithm of 100, and the rate of Intereſt added together, which in this Example is 106.

Secondly, multiply this Logarithm by the number of years, which in this Example is 7.

Thirdly, divide 100 by the rate of the Intereſt, which is 6, and it will produce 16, 6667; then take the Logarithm hereof, and adde it to the former Logarithm, the product whereof will yeild the Logarithm of the Arrearages with the ſaid ſumme for that time.

Fourthly, find out the true number of theſe *Arrearages*, & out of them ſubſtract the proportional part of 100 before found, according to the rate of the Intereſt; ſo you

ſhall

ſhall have the bare Arrearages for that proportional part.

Laſtly, take the Logarithm of theſe laſt *Arrearages*, and ſubſtract from them the Logarithm found by the multiplication of the *years* (in the ſecond rule) ſo you ſhall have the Logarithm of the true value of theſe *Arrearages* in ready money; the true number whereof being found out, and reduced into pounds, ſhillings, and pence, may be uſed as any number in the Tables.

Logarithm of 106	2,0253058
Logaritm of 100	2,0000000
Reſts by Subſtraction —	0,0253058
Which multiplied by 7	7
Comes to	0,1771406
Adde the Logar. of 16, 6667	1,2218487
Yields	1,3989893

This is the Logarithm of 25, 0605

From which 16, 6667 *ſubſtracted,*

Reſts	08, 3938	
The Logarithm of 8, 3938		0,9239595
Log. by Multiplication of Years ſubſtracted		0,1771406
Reſts		0,7468189

Which is the logarithm of 5,5824, which reduced, as in the little Table aforesaid, is 5 pounds, 11 shillings, 7 pence, 3 farthings, and somewhat more, which I have set down in my Table, 5 pounds, 11 shillings, 8 pence, not accounting any Fractions under a peny.

Several Tables shewing the true value of one pound yearly Rent, to continue any number of years under 31, and from thence to 100 years, increasing by every tenth Year, after the Rates of 5, 6, 7, 8, 9, 10 and 12, in the hundred, reckoning Interest upon Interest.

Purchase of Annuities at 5 per Centum.

The number of years to be purchased.	The worth of one pound Annuity. l.	sh.	d.
1	0	19	0
2	1	17	0
3	2	14	0
4	3	10	1
5	4	06	0
6	5	01	0
7	5	15	0
8	6	09	0
9	7	02	0
10	7	14	0
11	8	06	0
12	8	17	0
13	9	07	1
14	9	18	0
15	10	07	0
16	10	16	0
17	11	05	0
18	11	13	1
19	12	01	0
20	12	09	0
21	12	16	0
22	13	03	0
23	13	09	1
24	13	16	0
25	14	01	1
26	14	07	0
27	14	12	1
28	14	18	0
29	15	02	1
30	15	07	0
31	15	12	0
In tens of years			
40	17	02	0
50	18	05	0
60	18	18	0
70	19	06	1
80	19	11	1
90	19	15	0
100	19	16	0

Purchase of Annuities at 6 per Centum.

The number of years to be purchased.	l.	sh.	d.	*The worth of one pound Annuity.*
1	0	18	10	
2	1	16	08	
3	2	13	06	
4	3	09	04	
5	4	04	03	
6	4	18	04	
7	5	11	08	
8	6	04	02	
9	6	16	00	
10	7	07	02	
11	7	17	09	
12	8	07	02	
13	8	17	01	
14	9	05	11	
15	9	14	03	
16	10	02	01	
17	10	09	07	
18	10	16	07	
19	11	03	02	
20	11	09	05	
21	11	15	03	

The number of years to be purchased.	l.	sh.	d.	*The worth of one pound Annuity.*
22	12	00	10	
23	12	06	01	
24	12	11	00	
25	12	15	08	
26	13	00	01	
27	13	04	03	
28	13	08	01	
29	13	11	10	
30	13	15	04	
31	13	18	07	
				In tens of years
40	15	00	08	
50	15	14	06	
60	16	03	03	
70	16	07	08	
80	16	10	02	
90	16	11	07	
100	16	12	04	

Purchase of Annuities at 7 per Centum.

The number of years to be purchased.	*The worth of one pound Annuity.* l.	sh.	d.
1	0	18	08
2	1	16	02
3	2	12	06
4	3	07	09
5	4	12	00
6	4	15	04
7	5	07	09
8	5	19	05
9	6	10	04
10	7	00	06
11	7	10	00
12	7	18	10
13	8	07	02
14	8	14	11
15	9	02	02
16	9	08	11
17	9	15	03
18	10	01	02
19	10	06	08
20	10	11	11
21	10	16	08

The number of years to be purchased.	*The worth of one pound Annuity.* l.	sh.	d.
22	11	01	3
23	11	05	5
24	11	09	5
25	11	13	1
26	11	16	6
27	11	19	6
28	12	02	9
29	12	05	7
30	12	08	2
31	12	10	8
	In Tens of years.		
40	13	06	7
50	13	15	8
60	14	00	9
70	14	03	2
80	14	04	5
90	14	05	1
100	14	05	5

Purchaſe of Annuities at 8 per Centum.

The number of years to be purchaſed.	*The worth of one pound Annuity.* l.	ſh.	d.
1	0	18	06
2	1	15	08
3	2	11	06
4	3	06	03
5	3	19	10
6	4	12	05
7	5	04	01
8	5	14	11
9	6	04	11
10	6	14	02
11	7	02	09
12	7	10	08
13	7	18	01
14	8	04	10
15	8	11	02
16	8	17	00
17	9	02	05
18	9	07	05
19	9	12	01
20	9	16	04
21	10	00	04

The number of years to be purchaſed.	*The worth of one pound Annuity.* l.	ſh.	d.
22	10	04	0
23	10	07	5
24	10	10	7
25	10	13	6
26	10	16	3
27	10	18	9
28	11	01	0
29	11	03	2
30	11	05	2
31	11	07	0
In tens of years			
40	11	18	06
50	12	04	08
60	12	07	06
70	12	08	10
80	12	09	06
90	12	09	09
100	12	09	11

Purchase of Annuities at 9 per Centum.

The number of years to be purchased.	*The worth of one pound Annuity.* l.	sh.	d.
1	0	18	04
2	1	15	02
3	2	10	08
4	3	04	09
5	3	17	09
6	4	09	09
7	5	00	08
8	5	10	08
9	5	19	11
10	6	08	04
11	6	16	01
12	7	03	02
13	7	09	09
14	7	15	09
15	8	01	03
16	8	06	03
17	8	10	11
18	8	15	01
19	8	19	09
20	9	02	07
21	9	05	01

The number of years to be purchased.	*The worth of one pound Annuity.* l.	sh.	d.
22	9	08	10
23	9	11	7
24	9	14	2
25	9	16	6
26	9	18	7
27	10	00	6
28	10	02	4
29	10	04	0
30	10	05	6
31	10	06	10
	In Tens of years.		
40	10	15	02
50	10	19	03
60	11	00	10
70	11	01	08
80	11	02	10
90	11	02	01
100	11	02	02

Purchase of Annuities at 10 per Centum.

The number of years to be purchased.	l.	sh.	d.	*The worth of one pound Annuity.*
1	0	18	02	
2	1	14	08	
3	2	09	08	
4	3	03	04	
5	3	15	09	
6	4	07	01	
7	4	17	04	
8	5	06	08	
9	5	15	02	
10	6	02	10	
11	6	09	09	
12	6	16	03	
13	7	02	00	
14	7	07	04	
15	7	12	01	
16	7	16	05	
17	8	00	05	
18	8	04	00	
19	8	07	03	
20	8	10	03	
21	8	12	11	

The number of years to be purchased.	l.	sh.	d.	*The worth of one pound Annuity.*
22	8	15	5	
23	8	17	7	
24	8	19	8	
25	9	01	6	
26	9	03	2	
27	9	04	8	
28	9	06	1	
29	9	07	4	
30	9	08	6	
31	9	09	7	
	In tens of years			
40	9	15	07	
50	9	18	04	
60	9	19	04	
70	9	19	09	
80	9	19	11	
90	9	19	11	
100	10	00	00	

Purchase of Annuities at 12 per Centum.

The number of years to be purchased.	*The worth of one pound Annuity.* l.	sh.	d.
1	0	17	10
2	1	13	10
3	2	08	00
4	3	00	09
5	3	12	01
6	4	02	03
7	4	11	03
8	4	19	04
9	5	06	06
10	5	13	00
11	5	18	09
12	6	03	10
13	6	08	05
14	6	12	06
15	6	16	02
16	6	19	05
17	7	02	04
18	7	04	11
19	7	07	03
20	7	09	04
21	7	11	02

The number of years to be purchased.	*The worth of one pound Annuity.* l.	sh.	d.
22	7	12	10
23	7	14	04
24	7	15	08
25	7	16	10
26	7	17	10
27	7	18	10
28	7	19	08
29	8	00	05
30	8	01	01
31	8	01	08
	In tens of years.		
40	8	04	10
50	8	06	00
60	8	06	06
70	8	06	07
80	8	06	08
90			
100			

The uſe of theſe Tables.

Firſt, to know the price of any Annuity, to continue any number of Years.

HAving, according to the former obſervations, conſidered the nature of the thing you intend to buy, and ſo found out after what profit you may fitly lay out your money upon it, whether at 5, 6, 7, 8, 9, or 10 in the *hundred*, according to the certainty or uncertainty of the thing: then to caſt up what the value of the purchaſe will be, according to that rate, you muſt do thus.

Firſt, find the rate of the gain you would have for your *money* at the head of the *Table*, and find the *years* of the *continuance* of the *Leaſe or Annuity* on the ſide *of the Table*, and in that line under the *foreſaid rate*, you ſhall find what the *purchaſe of one pound a year*, to continue the ſaid number of *years is worth*; by the which, with a little *addition*, you may find the true value of any other prized *yearly income*; whether it be little or great.

As for Example.

What is *a Leaſe of ten Pounds yearly* value, *to continue* 21 *years*, *worth in ready money*

money, after the rate of six in the hundred Interest.

By that *Table* you see that *one pound a year to continue* 21 *years*, after the said rate of *six for the hundred*, is *worth* 11 *pound* 15 *shillings*, 3 *pence*. So then *ten pound a year is worth ten times as much*, which may be thus easily found.

Ten times 11 *pounnd is*	110 *l.*	00 *s.*	00 *d.*
Ten times 15 *shillings is*	007	10	00
Ten times 3 *pence is*	000	02	06
In all	117	12	06

Which is the value of the thing desired.

The like you may do by any other prized *Annuity* for any other time, and at any other rate of profit for your money, as the nature of the thing requires.

Thus the *Lease* of an house *for* 21 *years*, being reckoned by the *Table of* 10 *pound per Cent.* for *one pound or* 20 *shillings Annuity is worth* 8 *pound*, 12 *shillings*, 11 *pence*; therfore 10 *pound per Annum* is *worth ten times as much*, which you may reckon as before,

Ten times 8 *pound is*	80	0	0
Ten times 12 *shillings is*	06	0	0
Ten times 11 *pence is*	00	9	2
In all	86	9	2

Which

Which is the value of the ſaid Leaſe:

But becauſe men uſually reckon bargains of this nature by the yearly revenue of the thing, and uſe to ſay, ſuch a thing is worth ſo many years purchaſe; this may alſo plainly and truly be done by the foreſaid Tables: and though this way cannot be ſo exact as the other, yet for cuſtome ſake take it thus.

The Tables are exactly caſt up for one pound yearly revenue, at each of the ſaid rates, ſo that in the Sums ſet down therein, for every pound or 20 ſhillings you muſt reckon one years purchaſe; for ten ſhillings, half a years purchaſe, for five ſhillings, a quarter of a years purchaſe; and ſo for any ſumme under, proportionally.

But becauſe I would make things as plain as I could to every one, I have here reduced ſome of the moſt neceſſary Tables aforeſaid into years, and parts of a year, dividing the year into 12 parts, or months, which will be exact enough in moſt bargains.

Tables of purchasing.

This Table is fit to be used only in the purchase of Free-Hold Land,

At 5 per Cent. year to be purchas.	the value in year.	moneth	At 6 per Cent. year to be purchas.	the value in year.	moneth.
1	0	11	1	0	11
2	1	10	2	1	10
3	2	9	3	2	8
4	3	7	4	3	6
5	4	4	5	4	3
6	5	1	6	4	11
7	5	9	7	5	7
8	6	6	8	6	2
9	7	1	9	6	10
10	7	9	10	7	4
11	8	4	11	7	11
13	9	5	13	8	10
15	10	5	15	9	9
17	11	3	17	10	6
19	12	1	19	11	2
21	12	10	21	11	9
23	13	6	23	12	4
25	14	1	25	12	9
27	14	8	27	13	3
29	15	2	29	13	7
31	15	7	31	13	11
41	17	1	41	15	1
51	18	3	51	15	9
61	18	11	61	16	2
71	19	4	71	16	5
81	19	7	81	16	6
91	19	9	91	16	7
Fee simp.	20	0	Fee simp.	16	8

This Table may be used in the purchase of Copy-Hold-Land, or in Leases of Land.

This Table may be used in the purchases of Leases of Land, and of some Houses.

At 8 per Cent. year to be purchas.	the value in year.	moneth	At 10 per Cent. year to be purchas.	the value in year.	moneth
1	0	11	1	0	11
2	1	9	2	1	9
3	2	7	3	2	6
4	3	4	4	3	2
5	4	0	5	3	9
6	4	7	6	4	4
7	5	2	7	4	11
8	5	9	8	5	4
9	6	3	9	5	9
10	6	9	10	6	2
11	7	2	11	6	6
13	7	11	13	7	1
15	8	7	15	7	7
17	9	1	17	8	0
19	9	7	19	8	4
21	10	0	21	8	11
23	10	4	23	9	1
25	10	8	25	9	3
27	10	11	27	9	4
29	11	2	29	9	6
31	11	4	31	9	9
41	11	11	41	9	11
51	12	3	51	9	11
61	12	4	61	10	0
71	12	5	71	10	0
81	12	6	81	10	0
91	12	6	91	10	0
Fee simp.	12	6	Fee simp.	10	0

This Table is fittest to be used in the purchasing of Leases of Houses.

Thus the former queſtion being demanded, you ſhall find by theſe Tables, that a Leaſe of 21 years reckoned after the rate of *6 per Cent.* is worth 11 *years and nine months*, or 3 *quarters of a years purchaſe*. So that the *yearly rent* of the thing being 10 *l.* the value will be thus found.

Eleven times 10 *l. is*	110 *l.*	00	00
3 *quarters of* 10 *l. is*	7	10	00
In all	117	10	00

And this is very near the former price, and though not altogether ſo exact, yet will ſerve in moſt bargains of this nature.

Though either of theſe ways be exact enough for moſt men, and moſt queſtions of this nature; yet if any deſire to be more exact, they will find ſome trouble, when either the Annuity or the numbers in theſe *Tables*, do not make even *pounds*, or at leaſt *common* and *known parts of a pound*. In this caſe therefore, if you will be curious to know the preciſe value, you muſt have recourſe to the Table of *Decimal Fractions*, *page* 26. and thereby reduce both the price of the *Annuity*, and the price of the purchaſe thereof ſet down in theſe Tables, into thoſe fractions, and ſo multiplying one by the other, and reducing the product there-

of

of again by the ſaid Decimal Table, you ſhall have the true value of the purchaſe exactly.

Thus, let the Annuity be worth 55 pound, 12 ſhillings, 6 pence, and you deſire to know the value thereof for 21 years after the rate of ſix *per Centum.*

This Annuity reduced by the Decimal Table, will be 55 *l.* 6250 *p.* and the Table ſhews the worth of one pound for 21 years, is 11 pound, 15 ſhillings, 3 pence, which reduced likewiſe, is 11 *l.* 7625 *p.* now theſe two muſt be multiplied each by other; to which purpoſe ſet theſe two numbers thus,

11.7625
55.6250

588	1250
2352	50
70575	0
588125	
521785	

654,2890. 6257

All the difficulty now is in finding out the value of this product. Therefore obſerve firſt, that all the figures which are beyond the pounds, or Integers in the Multiplicator,

tor, are ſeparated by the point (.) to diſtinguiſh them; and under this point there muſt be a perpendicular line drawn to cut off all the figures under them as uſeleſs.

Then from this line account four figures more in the product, (accordiug to the places of the decimal Table) and there make a prick at 4. ſo the product appears to be 654 *l.* 2890. that is, 654 pound, 5 ſhillings, 9 pence, 2 farthings.

Or elſe to be more ſure, caſt it up as near as you can the former way; and ſo you ſhall ſee whether 2, 3, or 4 of the firſt figures of the product ſtand for pounds, & the four next take for the Fractions.

Some yet more curious, would have theſe Tables calculated, not only to ſhew the value of purchaſes in whole years (as the former Tables do) but for every three months. And though the difference will not be great yet there is ſome reaſon for it, for the Rent of Land or Houſes being paid every quarter or half year, the buyer hath the benefit of the firſt quarters rent. for three quarters of a year; of the ſecond quarters rent, for half a year, and of the third quarters rent, for a quarter of a year, all which the Seller loſeth, in ſelling by the former Tab'es.

Therefore, as I have for the uſe of the common ſort of men, made the former Tables

bles as plain as I could, not having reſpect to this exactneſs, becauſe no man is tied to make his bargain exactly according to theſe Rules, but only to learn hereby at what rate of profit he buyes or ſells: ſo for the ſatisfaction of thoſe who are more skilful, I have calculated theſe two Tables, ſhewing what one pound yearly rent to be paid quarterly is worth, any term of years or quarters under 21 years, the one at 6 *per Cent.* the other at 8 *per Cent.* theſe two being the moſt neceſſary in this caſe, and by which you may have ſome gheſs of the other rates.

The

The value of the purchase of Annuities which are to be paid every 3 months at 6 per Cent.

years	quar.	y. par. or li. parts	years	quar.	y par. or li. parts	years	quar.	y. par. or li. parts.
0	1	0 2463	7	1	5 8439	14	1	9, 5332
	2	0, 4890		2	6 0039		2	9 6387
	3	0 7280		3	6, 1614		3	9, 7425
1	0	0, 9636	8	0	6, 3167	15	0	9, 8448
	1	1, 1956		1	6, 4696		1	9 9456
	2	1, 4243		2	6, 6203		2	10 0449
	3	1 6495		3	6, 7688		3	10, 1428
2	0	1 8715	9	0	6, 9150	16	0	10, 2392
	1	2 0901		1	7, 0592		1	10, 3342
	2	2, 3055		2	7, 2011		2	10, 4277
	3	2, 5177		3	7, 3410		3	10, 5199
3	0	2, 7268	10	0	7, 4788	17	0	10, 6108
	1	2 9328		1	7, 6146		1	10, 7002
	2	3, 1358		2	7, 7484		2	10, 7884
	3	3, 3358		3	7, 8802		3	10, 8753
4	0	3, 5328	11	0	8, 0100	18	0	10, 9608
	1	3, 7269		1	8, 1379		1	11, 0452
	2	3, 9181		2	8, 2640		2	11, 1282
	3	4, 1065		3	8, 3881		3	11, 2100
5	0	4 2921	12	0	8, 5105	19	0	11, 2907
	1	4, 4750		1	8, 6310		1	11, 3701
	2	4, 6551		2	8, 7497		2	11, 4484
	3	4 8327		3	8 8667		3	11, 5255
6	0	5, 0075	13	0	8, 9820	20	0	11, 6014
	1	5, 1798		1	9, 0955		1	11, 6763
	2	5 3496		2	9 2074		2	11, 7500
	3	5 5168		3	9, 3177		3	11, 8227
7	0	5, 6816	14	0	9 4262	21	0	11, 8942

The value of the purchase of Annuities which are to be paid every 3 months at 8 per Cent.

years	quar.	y. par. or li. parts.	years	quar.	y. par. or li. parts	years	quar.	y. par. or li. parts.
0	1	0 2452	7	1	5, 5031	14	1	8 5711
	2	0, 4858		2	5, 6435		2	8 6530
	3	0, 7218		3	5, 7812		3	8 7333
1	0	0 9532	8	0	5, 9163	15	0	8 8121
	1	1, 1796		1	6, 0487		1	8, 8894
	2	1, 4031		2	6 1787		2	8, 9653
	3	1, 6216		3	6 3062		3	9, 0398
2	0	1, 8359	9	0	6, 4313	16	0	9 1126
	1	2, 0461		1	6 5539		1	9, 1842
	2	2 2524		2	6, 6743		2	9, 2542
	3	2 4547		3	6 7923		3	9, 3484
3	0	2, 6531	10	0	6 9081	17	0	9, 3909
	1	2, 8478		1	7, 0216		1	9 4572
	2	3, 0388		2	7, 1334		2	9, 5222
	3	3, 2261		3	7, 2425		3	9, 5859
4	0	3, 4099	11	0	7, 3492	18	0	9, 6485
	1	3, 5901		1	7, 4546		1	9 7099
	2	3, 7669		2	7, 5580		2	9 7701
	3	3, 9404		3	7, 6502		3	9 8291
5	0	4, 1105	12	0	7, 7585	19	0	9, 8871
	1	4, 2775		1	7, 8584		1	9 9689
	2	4, 4412		2	7, 9514		2	9, 9996
	3	4, 6018		3	8, 0451		3	10, 0543
6	0	4, 7593	13	0	8, 1371	20	0	10, 1079
	1	4, 9139		1	8, 2272		1	10 1606
	2	5, 0654		2	8, 3157		2	10, 2122
	3	5 2127		3	8, 4025		3	10, 2626
7	0	5, 3600	14	0	8, 4875	21	0	10 3125

The uſe of theſe Tables is the ſame with the former, only this for the more ready and exact uſe is caſt up in pounds, and decimal parts of pounds, which you may reduce by the decimal Table, *pag.* 26.

For example.

If you would know the value of the foreſaid Leaſe of ten pounds a year, to continue twenty one years, and to be received quarterly, after the rate of 6 *l. per Cent.* you ſhall find by this Table, that,

	l. parts.
One pound yearly for 21 *years is worth*	11 8942
This multiplied by 10, *the Rent of the purchaſe being* 10 *li. per Annum, makes*	118 9420
Which reduced by the decimal Table is	*l. ſh. d.* 118 18 10
Whereas the price by the former Table, page 32 *was found to be*	117 12 06
The difference being	001 06 04

There is another very neceſſary queſtion eaſily reſolved by theſe Tables, and that is, when any one doth ask of you ſuch a ſumme of money, or ſo many years purchaſe for a parcel of Land, Leaſe, or Houſe, to know what profit he allows you for your money.

As now, ſuppoſe you may have a Leaſe of an houſe for 21 *years*, *for eight years*, and *an half purchaſe*, what profit doth your money yield you?

For this purpoſe; firſt, you muſt find the number of *years* in the ſides of the *Tables*, and look in the ſeveral *Tables* untill you find the ſame ſumme demanded, or the neareſt you can find to it, then at the head of that *Table*, you ſhall find the *rate* of the profit which your money brings you in.

Thus, if according to this example, you look over all the *Tables*, *for eight years and an half purchaſe*, that is 8 *pounds*, 10 *ſhillings* in the line of 21 *years*, you ſhall find in the *Table of* 10 *per Centum*, at 21 *years* 8 *pounds*, 12 *ſhillings*, 11 *pence*; which is the neareſt ſumme that is to be found in all the Tables; and at the head of this Table you ſhall find, *your money* brings you in by this Bargain 10 in the hundred profit.

All this which hath been ſpoken of purchaſing of Leaſes, you may apply to Fines for the abatement of a greater or leſſer part of the Rent of any thing.

Thus, if a Tenant would have 5, 10, or 20 *pounds* abated in his yearly Rent, it may be reckoned *worth ſo many years purchaſe as* the Tables ſhew for.

But

But now ſuppoſe a Land-Lord demand an 100 *pound* fine for the Leaſe *of* an *Houſe for* 21 *years*, beſides the yearly Rent. I *would know how* much yearly Rent this 100 *pound doth countervalue* after the rate of 10 in the hundred.

In this caſe, you muſt take the ſumme ſet down in the Table, which for this example is 8 *pounds*, 12 *ſhillings*, 11 *pence*, and find how many times it is contained in an 100 *pounds*, *for ſo many* · *pounds of yearly* Rent it countervalues.

Now this you may do by reducing the ſaid 8 *pounds*, 12 *ſhillings*, 11 *pence into pence*; ſo it is 2075 pence. Likewiſe in an 100 *pound* are 24000; this divided by the foreſaid 2075, yields 11 in the quotient, and there remains $\frac{1175}{2075}$ which is ſomewhat more then an half; ſo that is above 11 *pound* 10 *ſhillings*.

If you will know this more exactly, multiply 1175 parts *of a pound* by 20, *ſo you have* 23500, which divided by the former number 2075, yields 11 *ſhillings in the quotient*, and 675 remaining.

Again, if you multiply this 675 by 12, it yields 8100, which divided by 2075, yields almoſt 4 pence, wanting only half a farthing.

So that this 100 *pound* fine ſhould coun-

tervalue according to this rate 11 *pound*, 11 *ſhillings*, 4 *pence*, *ferè* of yearly Rent.

Or you may have recourſe to the Table of Reduction, *pag.* 26 and thereby reduce the ſumme into tenths of pounds.

Thus the ſaid 8 pounds, 12 ſhillings, 11 pence reduced, is 8 pound, 6458. with this divide the price of your Fine, an hundred pound, adding ſome cyphers thereto, as need ſhall be. So in this Example, the Fine being 100 pound, you ſhall find, 11 pound 5663 that is, 11 pounds, 11 ſhillings, 4 pence *ferè*; and ſo much yearly Rent doth an 100 pound Fine countervalue at the rate of ten pound in the hundred for 21 years.

Laſtly, you may ſee by the latter end of the Tables, what rate of profit your money yields you, buying any thing out-right at any number of years purchaſe. Thus at ten year purchaſe, your money yields you 10 *per Centum* profit, as you may ſee by that Table. At 21 years and an half purchaſe for the Fee-ſimple, your money yields you 8 *per Centum* profit, as you may ſee by the end of the Table of 8 *per Centum*.. And at 20 years purchaſe your money yields you but 5 *per Centum* profit.

And if you would know this more exactly, take this Rule, divide an 100 by the number of years, the quotient will ſhew you

the

the Rate of the profit you have for your money.

Thus 100 divided by 12 years, the price of the purchaſe of the Fee-ſimple, yields 8. 3333, or 8 pound, 6 ſhillings 8 pence for the rate of the profit.

So 100 divided by 18 years, yields 55555 which 5 pound, 11 ſhillings, 11 pence for the rate of your profit.

Or elſe if you divide an 100 by the rate of the profit you look to have, in the buying of your purchaſe, you may ſee how many years purchaſe you may fully give for it.

Thus, divide an 100 by 6, if that be the rate of the profit you deſire in your purchaſe, and you ſhall find 16 years and two thirds of a year, ſo many years purchaſe you may give, and yet make 6 in the hundred profit of your money.

By this a man having bought Land or Houſes at any price, he may know which of the foreſaid Tables he muſt uſe in the letting Leaſes thereof again, that he ſave or get by the Bargain, as he ſhall think fit; or at leaſt may know whether he gets or loſes by the Leaſes he lets.

Of Reverſions.

THus much for buying any thing which is preſently to be poſſeſſed.

There are other kind of *purchaſes in Reverſion*, when the thing yields no profit for the preſent, till ſome conſiderable term of *years* be paſſed.

And in theſe bargains you muſt *alſo look* firſt into the quality of the thing, and the certainty thereof; and accordingly ſeek out the value thereof, at a greater or leſſer rate of Intereſt.

And to this purpoſe I have ſet down theſe tables of Reverſions to the ſeveral rates of Intereſt aforeſaid; *for though* they are included in the other, yet I thought it ſomewhat more plain, thus to extract them for *your more* ready uſe. And I have contracted them into as ſmall a compaſs as I can, yet ſo as they will be plain enough, conſidering what hath been ſaid before, theſe being to be uſed after the ſame manner.

Theſe Tables ſhew how much *one pound* or 20 s. to be paid or received, any number *of years hereafter*, is worth at the preſent time in ready money, after the ſeveral rates of 5, 6, 8, 10, and 12 *per Cent*.

Tables

Tables of Reversions.

	V per C.		VI per C.		VIII per C.		X per C.		XII per C.	
	sh.	d.	sh.	d.	sh.	d.	sh.	d.	sh.	d.
1	19	00	18	10	16	06	18	02	17	10
2	18	02	17	09	17	01	16	06	16	00
3	17	03	16	09	15	10	15	00	14	02
4	16	06	15	10	14	08	13	08	12	09
5	15	08	14	11	13	07	12	05	11	04
6	14	11	14	01	12	07	11	04	10	02
7	14	03	13	04	11	08	10	03	9	00
8	13	06	12	06	10	09	9	04	8	01
9	12	11	11	10	10	00	8	06	7	02
10	12	01	11	02	9	04	7	08	6	06
11	11	11	10	07	8	06	6	11	5	09
12	11	01	9	11	7	11	6	06	5	01
13	10	08	9	05	7	04	5	09	4	07
14	10	01	8	10	6	09	5	04	4	01
15	9	08	8	04	6	03	4	09	3	08
16	9	01	7	10	5	10	4	04	3	03
17	8	09	7	06	5	04	4	00	2	11
18	8	04	7	00	5	00	3	07	2	07
19	7	11	6	07	4	07	3	03	2	04
20	7	06	6	03	4	03	3	00	2	01
21	7	02	5	10	3	11	2	09	1	10
22	6	10	5	07	3	08	2	06	1	08
23	6	07	5	03	3	04	2	02	1	06
24	6	02	4	11	3	01	2	00	1	04
25	5	11	4	08	2	11	1	10	1	02
26	5	07	4	05	2	08	1	08	1	00
27	5	05	4	02	2	06	1	06	0	11
28	5	01	3	10	2	04	1	05	0	10
29	4	10	3	09	2	02	1	03	0	09
30	4	08	3	06	2	00	1	02	0	08
31	4	06	3	03	1	10	1	01	0	07

Now becauſe theſe Tables ſhew the value of a reverſion but to 31 years (though that may be enough for moſt occaſions) yet if you pleaſe to know the worth of a reverſion for any longer time, this brief and more general Table may give you ſome inſight therein.

The increaſe of 20 ſhill. principal.	A Table of Reverſions.						The decreaſe of twenty ſhillings.		
	5	6	8	10	11	12			
	Rate of the Intereſt.								
Pounds.	Number of Years.						ſh.	d.	q.
1	15	12	9	7	6	5	10	0	0
4	30	24	18	15	12	10	5	0	0
8	45	36	27	22	18	15	2	6	0
16	60	48	36	30	24	20	1	3	0
32	75	60	45	37	30	25	0	7	2
64	90	72	54	45	36	30	0	3	3
128	105	84	63	52	42	35	0	2	0
256	120	96	72	60	48	40	0	1	0
512	135	108	81	67	54	45	0	0	2
1024	150	120	90	75	60	50	0	0	1

Note

Note, you cannot expect this Table ſo exact as a particular Table; and when you cannot find your juſt number of years, you muſt gheſs at the increaſe or decreaſe by proportion.

This Table is ſo plain, that it needs no declaration; yet leſt any ſhould not underſtand it, take this direction in the uſe thereof.

Firſt, find out your rate of Intereſt deſired, at the top of the Table, then look down in that Column, till you find your number of years deſired (or the neareſt thereto) and againſt this number of years in that ſame line upon the right hand of the Table you have the decreaſe of one pound, or the worth of one pound, or 20 s. in reverſion after the ſaid number of years.

And though it make little for our preſent purpoſe, yet becauſe it may ſo fitly be expreſſed in this Table, I have on the left hand ſide of the Table expreſſed the value and increaſe of one pound in the like number of years.

Example.

Thus in the middle column of the Table, which is caſt up at the rate of 8 *l. per Cent.* you ſhall find in the laſt line, that in the ſpace of ninety years, the reverſion of one pound is worth but a farthing, and the in-

creaſe of one pound comes to 1024 l.

Now the uſe of theſe Tables are Thus.

WHen *you would know* the *worth of* any thing in *reverſion*, firſt you muſt conſider the nature of the thing, whether it be an *Houſe or Land*, and whether *you* are to buy a Leaſe, or Fee-ſimple thereof, and ſo accordingly by the former rules, find out what it is *worth* in ready money, as if it were free from all ingagements.

Secondly, according to the nature of the thing, *ſo you may look to have more or leſs allowance for your money*, and ſo having conſidered what allowance is fit for the purchaſe, find that out at the top of the Table, and in that Column, at, or againſt the number of years for which the thing is engaged, you ſhall find the *worth of one pound, or twenty ſhillings in reverſion for the ſaid time.*

Thirdly, *look how many pounds the Purchaſe would be worth* in ready *money*, ſo many times you muſt take the ſaid reverſion *of one pound*, and either by addition or multiplication bring it into one ſumme, and ſo you have the true value of the reverſion.

For

For Example.

A parcel of *Land of one hundred pounds* yearly Rent, being worth 20 *years purchase is worth in ready money* 2000 *l.*

Now ſuppoſe this Land is morgaged, or Leaſed out for 21 years, what is the Reverſion thereof at the end of 21 years, *worth* in ready money? Here firſt you ſee the Land if it were free from ingagements were *worth* 2000 *l.* ready money.

Secondly, becauſe it is a reverſion of Land, and ſo certain, it is fit the allowance ſhould be but after the rate of 5 *l. per Cent.* according as the purchaſe thereof is *worth.* Now the firſt Table of reverſions ſhew, that *one pound,* at the end *of one and twenty* years is *worth* but 7 s. 2 d. ready money at the ſaid rate of 5 *l. per Cent.*

Thirdly, this 7 s. 2 d. therefore muſt be added or multiplied 2000 times according to the full value of the purchaſe, which you may eaſily do by the Table of accounts following, at the latter end the Book.

As thus,	*l. ſh. d.*
2000 *times* 7 *s. is*	700 000
2000 *times* 2 *d. is*	016 134
In all	716 134

And this is the *worth of* the ſaid Reverſion.

If it be the Reverſion *of* a leaſe *of a houſe*

or

or Land, you must do likewise, onely find the worth of the Reversion of one pound, under the Title of *6 l. 8 l.* or *10 l. per Cent.* as the nature of the thing requires.

For your better instructions herein, you may make use of these following Rules, which are grounded upon the first Tables of purchases, yet come much to one reckoning, and perhaps may be somewhat more plain and easie.

I.

If you are to purchase the Reversion of a piece of Land.

First, consider how many years purchase the Land is worth, if it were presently to be possessed, which is about 20 years purchase, for which account 20 pound.

Then look in the Table under the Rate of 6 in the hundred, (which is the Rate fittest for Leases of Land) how much the years, for which it is engaged, comes to.

Now substract this out of the other, and the remaining summe will give you the value of the purchase, accounting the pounds for years, and the shillings and pence for parts of a year.

Thus for Example, any peice of Land being worth 20 years purchase, being ingaged

gaged by Leaſe, or otherwiſe, for 21 years the reverſion will be worth eight years and a quarters purchaſe.

For, ſuppoſe the rent to be one pound or 20 s. a year.

The full value of it is	20*l.*	00*s.*	00*d.*
The Leaſe of 21 years at ſix in the hundred, comes to	11	15	03
Which ſubſtracted, ſhews	08	04	09

That is, eight years, and almoſt a quarter of a years purchaſe, and ſo you may reckon it up for any other yearly Rent.

II.

The like courſe you muſt take in purchaſing the Reverſion of Houſes.

Firſt, account their full value, and then ſubſtract the worth of the years for which they are ingaged, at rates according to their goodneſs.

Thus reckoning a good new built houſe to be worth 12 years purchaſe, the reverſion thereof after 21 years will be worth about three years, and a quarter, and half a quarters purchaſe.

For the Rent being 20 s. yearly.

	li.	ſh.	d.
The full value	12	00	00
The Leaſe of 21 years at ten in the hundred, comes to	08	12	11
Which ſubſtracted, ſhews,	03	07	01

III.

A Tenant hath ſome time of years in a Leaſe, and either he or his Land-lord deſires to have his years increaſed to any certain number.

To find the true worth of ſuch a Bargain, you need only find out by the Tables the true value of the whole number of years deſired. Then find out likewiſe the true value of the leſſer number of years, that the Tenant hath already. Laſtly, ſubſtract the one from the other, and the remainder ſhews how many years purchaſe the thing worth.

Thus a Leaſe of Land for 60 years, wherein the Tenant hath already a Leaſe of 21 years, is worth about 4 years and a half purchaſe.

For the Rent being 20 s. yearly.

	l.	ſh.	d.
The whole 60 years, at 6 per Cent. is worth	16	03	03
The 21 years at the ſame rate of 6 per Cent. is	11	15	03
Which ſubſtracted, reſts	04	08	00

In like manner a Leaſe of an houſe for 60 years, wherein a Tenant hath 21 years already, is worth one year, and a quarters purchaſe, and ſomewhat more.

For

For the Rent being 20 s. yearly.

	l.	sh.	d.
The 60 years after ten in the hundred is worth	09	19	04
And 21 years at the same rate, is worth	08	12	11
Which substracted leaves	01	06	05

That is, about one year, and one quarter of a years purchase: so that let the house be of what yearly rent it will, the lease will be worth one year, and a quarter of a years purchase and about a moneth over.

The like you may do for any other number of years.

But these extraordinary long Leases are not so profitable for the Landlord, for they yield him but little more ready money than a Lease of 20 or 30 years shorter.

As now suppose a Landlord would make a Lease of Land up to 40 years, wherein his Tenant hath 20 years to come, what may it be worth? you shall find as before.

The Rent being 20 s a year.

	l.	sh.	d.
The 40 years are worth at 6 per Centum.	15	00	8
The twenty years at the same rate are worth	11	15	3
Which substracted, rests	03	5	5
Now the Lease of 60 yields but	4	8	0

So that for little more than one years pur-

purchaſe he may ſave 20 years benefit to himſelf or his heirs out of 60 years. And if the Leaſe ſhould be longer, as an 100 years, his damage would be worſe.

So for a Leaſe of an houſe,

	li.	ſh.	d.
The 40 years at 40 per Centum *are worth*	9	15	7
The twenty years at the ſame rate are worth	8	10	13
Which ſubſtracted, Reſt.	1	5	4
The Leaſe for 60 years, yields but	1	6	5

So that by this there will be 20 years ſaved out of the 60 for very little money. So great loſs comes by ſelling ſuch long Leaſes or Reverſions.

And theſe Reverſions are ſomewhat conſiderable in a ſhorter time; as thus,

Suppoſe a mans Leaſe is out within 3 years, and he deſires to have a new Leaſe of 21 years, to begin when his 3 years are out, what is this Leaſe worth in ready money?

To find out the worth of this, conſider the time he hath in his old Leaſe, which is 3 years, and this added to 21 years, makes it 24 years. Then look out the full worth of theſe 24, and ſubſtract from it the worth of the 3 years, the reſt is the value of the ſaid Leaſe in ready money.

Thus, if it be a Leaſe of Land,

The Rent being 20 s. a year.

24 years

	li.	sh.	d.
24 *years at six per Centum are worth*	12	11	0
And 3 years are worth	2	13	6
Which substracted, Rests	9	17	6

Which is ten years, lacking only half a quarters purchase, whereas a Lease of 21 years presently to begin is worth 11 pound, 15 shillings, 3 pence, that is, 11 years and three quarters purchase.

One question more, and so I shall conclude the use of these Tables.

A man hath his life in a parcel of Land, or in an house, and desires to have this Lease for Life changed into a Lease of 21 years.

The rent being 20 s. a year.

	li.	sh.	d.
A Lease of 21 years of Land, at six per Centum is worth	11	15	3
His life (if strong and lusty) may be worth as much as a Lease of 10 years which at the same rate of 6 per Cent. is worth	7	7	2
Which substracted, Rests	4	8	1

And so much is it worth to have his Lease altered, *viz.* 4 years, and almost half a years purchase.

Many other Rules and Tables concerning Annuities might be propounded, but these I think of most frequent use and necessary consequence, which thus you see may be all per-

performed by this one ſort of Tables.

BUt now ſince none of theſe bargains can be made without reſpect had to theſe or ſuch like Tables of Intereſt, or Uſury, wherin there muſt reſpect be had, not only to ſimple Uſe, but to Uſe upon Uſe? I hope I may without offence to any ſpeak a word or two in the defence of Uſury.

The Argument I ſhall uſe is only this; that if it be not only lawful, but neceſſary to give and take Uſe upon Uſe; then, at leaſt, it may be lawful, though not neceſſary, to give or take moderate ſimple Uſe, according to the allowance of the times.

That it is not only lawful but neceſſary, to take or give Uſe upon Uſe, is plainly manifeſt in all theſe kind of Bargains, which cannot be made any other way. Now the neceſſity of theſe Bargains is manifeſt every day, and the lawfulneſs of them cannot be queſtioned, being ſo plainly allowed by the Laws of God and Men.

Indeed many are the abuſes thereof, which, if poſſible, ſhould be reformed; and to this purpoſe the Law and our Governors have don their parts, not only formerly, but lately, as ſetting ſo low a rate of Intereſt, as *6 per Cent.* And according to this new rate I have calculated theſe Tables, whereby every

very one may see what he ought to give or take, and so neither endanger nor endamage himself either way.

A new and exact Table of Interest, shewing the true Interest due upon any Sum of Money for any time, at the rate of 6 *per Centum*.

For the more exactness in this Table, in every Column the money is reckoned not only in pounds, shillings, and pence, (which is ordinary) but each penny is divided into an hundred parts; which, though it may seem somewhat strange at first, yet they are easily reckoned into farthings, which are more usual with us. For twenty five, which is a quarter of an hundred, make one farthing; fifty of those parts are an half penny, and seventy five are three farthings.

This considered, there will be, I hope, no difficulty in the Tables.

Tables

Tables of Intereſt at 6 per Cent.

		1 day				2 dayes				3 dayes			
		l.	ſh.	d.	c.	l.	ſh.	d.	c.	l.	ſh.	d.	c.
Shill.	5				1				2				3
	10				2				4				6
	15				3				6				9
Pounds	1				4				8				12
	2				8				16				24
	3				12				24				35
	4				15				31				47
	5				19				39				59
	6				23				47				71
	7				27				55				82
	8				31				63				94
	9				35				71			1	06
	10				39				78			1	18
Pounds	20				79			1	58			2	37
	30			1	18			2	36			3	55
	40			1	58			3	15			4	73
	50			1	97			3	94			5	91
	60			2	36			4	73			7	10
	70			2	76			5	52			8	28
	80			3	15			6	31			9	46
	90			3	55			7	10			10	65
	100		0	3	94		0	7	89		0	11	83
	200		0	7	89		1	3	78		1	11	67
	300		0	11	83		1	11	67		2	11	50
	400		1	3	78		2	7	56		3	11	34
	500		1	7	72		3	3	45		4	11	18
	600		1	11	67		3	11	34		5	11	1
	700		2	3	61		4	7	23		6	10	85
	800		2	7	56		5	3	12		7	10	68
	900		2	11	50		5	11	01		8	10	52
	1000		3	3	45		6	6	90		9	10	53

Tables of Interest at 6 per Cent.

Shill.	4 dayes li. th. d. c.	5 dayes li. th. d. c.	6 dayes li. th. d. c
5			6
10			12
15	12	15	18
1	15	19	23
2	31	39	47
3	47	59	71
4	63	78	94
5	78	98	1 18
6	94	1 18	1 42
7	1 10	1 38	1 65
8	1 26	1 58	1 89
9	1 42	1 77	2 13
10	1 57	1 97	3 38
20	3 15	3 94	4 73
30	4 73	5 91	7 10
40	6 31	7 89	9 46
50	7 89	9 86	11 83
60	9 46	11 83	1 2 20
70	11 4	1 1 80	1 4 57
80	1 0 62	1 3 78	1 6 93
90	1 2 20	1 5 75	1 9 30
100	1 3 78	1 7 72	1 11 67
200	2 7 56	3 3 45	3 11 34
300	3 11 34	4 11 18	5 10 1
400	5 3 12	6 6 90	7 10 68
500	6 6 90	8 2 63	9 10 35
600	7 10 68	9 10 35	11 10 2
700	9 2 46	11 6 8	13 9 69
800	10 6 24	15 1 80	15 9 36
900	11 10 2	14 9 53	17 9 4
1000	13 1 801	16 5 26	19 8 71

Tables of Interest at 6 per Cent.

	7 dayes			8 dayes			9 dayes		
	li.	sh.	d. c.	li.	sh.	d. c.	l.	sh.	d. c
Shill. 5			7			8			9
10			13			15			17
15			20			23			26
1			27			31			31
2			57			63			71
3			82			94		1	06
4		1	10		1	26		1	42
5		1	38		1	57		1	77
6		1	65		1	89		2	13
7		1	93		2	20		2	48
8		2	21		2	52		2	84
9		2	48		2	84		3	19
10		2	76		3	15		3	55
20		5	52		6	31		7	10
30		8	28		9	66		10	65
40		11	04	1	0	22	1	2	20
50	1	1	80	1	3	78	1	5	75
60	1	4	57	1	6	93	1	9	30
70	1	7	33	1	10	09	2	0	85
80	1	10	09	2	1	24	2	4	40
90	2	00	85	2	4	40	2	8	05
100	2	3	61	2	8	56	2	11	50
200	4	7	23	5	3	12	5	11	01
300	6	10	84	7	10	68	8	10	52
400	9	2	46	10	9	24	11	10	02
500	11	6	8	13	1	80	14	9	53
600	13	9	69	15	9	36	17	9	04
700	16	1	31	18	4	93	1	0	8 54
800	18	4	98	1	01	0 49	1	3	8 05
900	1	0	8 54	1	03	8 05	1	6	7 56
1000	1	3	0 16	1	06	3 61	1	9	7 06

Pounds

Pounds

Tables of Interest. at 6 per Cent.

		10 dayes				20 dayes				30 dayes			
		li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Spill.	5				10				19				29
	10				20				39				59
	15				30				59				88
Pounds	1				39				70		1	18	
	2				78		1	57			2	36	
	3		1	18			2	36			3	55	
	4		1	57			3	15			4	73	
	5		1	97			3	94			5	91	
	6		2	36			4	73			7	10	
	7		2	76			5	52			8	28	
	8		3	15			6	31			9	46	
	9		3	55			7	10			10	65	
Pounds	10		3	94			7	89			11	83	
	20		7	89		1	3	78		1	11	67	
	30		11	83		1	11	67		2	11	50	
	40	1	3	78		2	7	36		3	11	34	
	50	1	7	72		3	3	45		4	11	17	
	60	1	11	67		3	11	34		5	11	1	
	70	2	3	61		4	7	23		6	10	84	
	80	2	7	56		5	3	12		7	10	68	
	90	2	11	50		5	11	1		8	10	52	
	100	3	3	45		6	6	90		9	10	35	
	200	6	6	90		13	1	80		19	8	71	
	300	9	10	35		19	8	71		1	9	7	06
	400	13	1	80	1	6	3	61		1	19	5	42
	500	16	5	26	1	12	10	52		2	9	3	78
	600	19	8	71	1	19	5	42		2	19	2	13
	700	1	3	0	16	2	6	0	32	3	9	0	49
	800	1	6	3	61	2	12	7	23	3	18	10	84
	900	1	9	7	06	2	19	2	13	4	8	9	20
	1000	11	2	10	52	3	5	9	44	4	18	7	56

Tables of Interest at 6 per Cent.

	1 Moneth.				2 Moneths.				3 Moneths.			
	li.	sh.	d.	c	li.	sh.	d.	c.	li.	sh.	d.	c
Shill.												
5				30				60				90
10				60			1	20			1	80
15				90			1	30			2	70
Pounds												
1			1	20			2	40			3	60
2			2	40			4	80			7	20
3			3	60			7	20			10	80
4			4	80			9	60		1	2	40
5			6	00		1	0	00		1	6	00
6			7	20		1	2	40		1	9	60
7			8	40		1	4	80		2	1	20
8			9	60		1	7	20		2	4	80
9			10	80		1	9	60		2	8	40
Pounds												
10		1	0	0		2	0	0		3	0	0
20		2	0	0		4	0	0		6	0	0
30		3	0	0		6	0	0		9	0	0
40		4	0	0		8	0	0		12	0	0
50		5	0	0		10	0	0		15	0	0
60		6	0	0		12	0	0		18	0	0
70		7	0	0		14	0	0	1	1	0	0
80		8	0	0		16	0	0	1	4	0	0
90		9	0	0		18	0	0	1	7	0	0
100		10	0	0	1	0	0	0	1	10	0	0
200	1	00	0	0	2	0	0	0	3	00	0	0
300	1	10	0	0	3	0	0	0	4	10	0	0
400	2	00	0	0	4	0	0	0	6	00	0	0
500	2	10	0	0	5	0	0	0	7	10	0	0
600	3	00	0	0	6	0	0	0	9	00	0	0
700	3	10	0	0	7	0	0	0	10	10	0	0
800	4	00	0	0	8	0	0	0	12	00	0	0
900	4	10	0	0	9	0	0	0	13	10	0	0
1000	5	00	0	0	10	0	0	0	15	00	0	0

Tables of Intereſt at 6 per Cent.

	4 Moneth.				5 Months.				6 Months.			
	li.	th.	d.	c.	li.	th.	d.	c.	li.	th.	d.	c.
Shill. 5			1	20			1	50			1	80
10			2	40			3	00			3	60
15			3	60			4	50			5	40
Pounds 1			4	80			6	0			7	20
2			9	60	1	0	0		1	2	40	
3		1	2	40	1	6	0		1	9	60	
4		1	7	20	2	0	0		2	4	80	
5		2	0	00	2	6	0		3	0	00	
6		2	4	80	3	0	0		3	7	20	
7		2	9	60	3	6	0		4	2	40	
8		3	2	40	4	0	0		4	9	60	
9		3	7	20	4	6	0		5	1	80	
Pounds 10		4	0	0	05	0	0		6	0	0	
20		8	0	0	10	0	0		12	0	0	
30		12	0	0	15	0	0		18	0	0	
40		16	0	0	1	00	0	0	1	04	0	0
50	1	00	0	0	1	05	0	0	1	10	0	0
60	1	4	0	0	1	10	0	0	1	16	0	0
70	1	8	0	0	1	15	0	0	2	02	0	0
80	1	12	0	0	2	00	0	0	2	08	0	0
90	1	16	0	0	2	05	0	0	2	14	0	0
100	2	0	0	0	2	10	0	0	3	0	0	0
200	4	0	0	0	5	00	0	0	6	0	0	0
300	6	0	0	0	7	10	0	0	9	0	0	0
400	8	0	0	0	10	00	0	0	12	0	0	0
500	10	0	0	0	12	10	0	0	15	0	0	0
600	12	0	0	0	15	00	0	0	18	0	0	0
700	14	0	0	0	17	10	0	0	21	0	0	0
800	16	0	0	0	20	00	0	0	24	0	0	0
900	18	0	0	0	22	10	0	0	27	0	0	0
1000	20	0	0	0	25	00	0	0	30	0	0	0

Tables of Interest at 6 per Cent.

		7 Months.			8 Months.			9 Months.		
		li.	sh.	d. c.	li.	sh.	d. c.	l.	sh.	d. c
Shill.	5			2 10			2 40			2 70
	10			4 20			4 80			5 40
	15			6 30			7 20			8 10
Pounds	1			8 40			9 60			10 80
	2		1	4 20		1	7 20		1	9 60
	3		2	1 80		2	4 80		2	8 40
	4		2	9 60		3	2 40		3	7 20
	5		3	6 00		4	0 00		4	6 00
	6		4	2 40		4	9 60		5	4 80
	7		4	10 80		5	7 20		6	3 60
	8		5	7 20		6	4 80		7	2 40
	9		6	3 60		7	2 40		8	1 20
	10		07	0 0		08	0 0		09	0 0
	20		14	0 0		16	0 0		18	0 0
	30	1	01	0 0	1	04	0 0	1	07	0 0
	40	1	08	0 0	1	12	0 0	1	16	0 0
	50	1	15	0 0	2	00	0 0	2	05	0 0
	60	2	02	0 0	2	08	0 0	2	14	0 0
	70	2	09	0 0	2	16	0 0	3	03	0 0
	80	2	16	0 0	3	04	0 0	3	12	0 0
	90	3	03	0 0	3	12	0 0	4	01	0 0
	100	3	10	0 0	4	0	0 0	4	10	0 0
	200	7	00	0 0	8	0	0 0	9	00	0 0
	300	10	10	0 0	12	0	0 0	13	10	0 0
	400	14	00	0 0	16	0	0 0	18	00	0 0
	500	17	10	0 0	20	0	0 0	22	10	0 0
	600	21	00	0 0	24	0	0 0	27	00	0 0
	700	24	10	0 0	28	0	0 0	31	10	0 0
	800	28	00	0 0	32	0	0 0	36	00	0 0
	900	31	10	0 0	36	0	0 0	40	10	0 0
	1000	35	00	0 0	40	0	0 0	45	00	0 0

Tables of Intereſt at 6 per Cent.

		10 Moneth.			11 Months.			12 Months.		
		li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill.	5			3 0			3 30			3 60
	10			6 0			6 60			7 20
	15			9 0			9 90			10 80
Pounds	1		1	0 0		1	1 20		1	2 40
	2		2	0 0		2	2 40		2	80
	3		3	0 0		3	3 60		3	4 20
	4		4	0 0		4	4 80		4	7 60
	5		5	0 0		5	6 00		6	0 00
	6		6	0 0		6	7 20		7	2 40
	7		7	0 0		7	8 40		8	4 80
	8		8	0 0		8	9 60		9	7 20
	9		9	0 0		9	10 80		10	9 60
Pounds	10		10	0 0		11	0 0		12	0 0
	20	1	00	0 0	1	02	0 0	1	04	0 0
	30	1	10	0 0	1	13	0 0	1	16	0 0
	40	2	00	0 0	2	04	0 0	2	08	0 0
	50	2	10	0 0	2	15	0 0	3	00	0 0
	60	3	00	0 0	3	06	0 0	3	12	0 0
	70	3	10	0 0	3	17	0 0	4	04	0 0
	80	4	00	0 0	4	08	0 0	4	16	0 0
	90	4	10	0 0	4	19	0 0	5	08	0 0
	100	5	0	0 0	5	10	0 0	6	0	0 0
	200	10	0	0 0	11	0	0 0	12	0	0 0
	300	15	0	0 0	16	10	0 0	18	0	0 0
	400	20	0	0 0	22	0	0 0	24	0	0 0
	500	25	0	0 0	27	10	0 0	30	0	0 0
	600	30	0	0 0	33	0	0 0	36	0	0 0
	700	35	0	0 0	381	0	0 0	42	0	0 0
	800	40	0	0 0	44	0	0 0	48	0	0 0
	900	45	0	0 0	49	10	0 0	54	0	0 0
	1000	50	0	0 0	55	0	0 0	60	0	0 0

The uſe of theſe Tables.

NOw to find the Intereſt of any ſumme of money for any time, by this Table: firſt look the ſumme of money on the ſide of the Table; then find the time required at the head of the Table; and in the ſquare meeting of theſe two, you ſhall find the intereſt thereof. Only note, if you cannot find *your ſumme of money*, *or* the time all at *once*, *you* muſt take it at *two or* three times and ſo add them together.

Thus the intereſt of 146 pounds for ſix months will be found thus

	li.	ſh.	d.	c.
100 *pounds for 6 months is*	3	0	0	0
40 *pounds for 6 months is*	1	4	0	0
6 *pound for 6 months is*	0	3	7	20
In all	4	7	7	20

Which is 4 *pounds*, 7 *ſhillings*, 7 *pence*, and 20 hundred parts of a penny, that is, almoſt a farthing, as I noted before.

And thus you may *do for* any *other* ſumme *of money*, and *for the more exactneſs*, I have ſet down the Intereſt *money*, *not only in Months*, but in ſingle dayes to a month. *Now a month* in theſe Tables is ſuppoſed to be juſt the 12th. part of a year, but yet it is ordinarily reckoned by the uſual months of the year, *Jan. Feb. March, &c.*

But

But this way of reckoning by months is *not altogether so* exact as it might be wished, *for some months* have but 30 dayes, and others 31, and *February* hath commonly but 28 And therefore it may be *worth* the while (especially in great sums) *to look more curiously into* the time, and count it by dayes: *for otherwise* there may be *wrong done* either to the lender *or borrower* unawares.

For instance, suppose a Bond made the 10th. of *February* for six months, or half a year, the ordinary time. If you reckon by months, it will be due the 10th. of *August*, but since there are 365 dayes in a year, the half thereof is 182 dayes and an half, but you cannot reckon less then 183 dayes; and if you account these 183 days from the 10th. of *February*, they will reach to the 12th. of *August*. So that by reckoning the time by the months, the borrower will pay the money two dayes *too soon*. Now if the sum of money be but 1000 pound, the Interest *for those two* dayes will be 6 shillings 7 pence (very near) and so much *wrong* the borrower receives, and the Statute (perhaps) is broken hereby.

To remedy this, I have observed, that Scriveners usually make such Bonds, to be paid alwayes two dayes after the day

whereon the Bond is dated.

But herein alſo they may do as much or more wrong on the other ſide, though with leſs danger of breaking the Statute. For, ſuppoſe a Bond be made upon the 10th. of *Auguſt*, they (according to this rule) make it to be paid the 12 of *February*; whereas accounting 183 days (as they ought to do) for the half year, the Bond will be (juſtly) due upon the 9th. of *February*: and ſo by this means the Lender loſeth three dayes Intereſt.

Again, if a Bond be made the 10th. of *February* to be paid the 12 of *Auguſt*; although in this (by chance) there is no wrong to either party: yet if a new Bond be made this 12 of *Auguſt*, to be paid the 14 of *February*, the Lender you ſee in the whole year loſeth four dayes, which is very conſiderable in great ſums of money, or when Bonds are often renewed.

To avoid theſe inconveniences, I have made theſe following Tables; by which you ſhall know both the exact time of any part of a year in dayes; and alſo the intereſt which is due for any time or number of dayes. Only herein I muſt intreat you to walk a ſtep further into the Art of *Arithmetick*, and inſtead of *Addition* to uſe *Multiplication*.

Tables

Tables of Intereſt at 6 per Centum.

	D.	January.	D.	February	D.	March.
1	1	0001 643	32	0052,606	60	0098,630
2	2	0003 287	33	0054 246	61	0100 275
3	3	004,931	34	055,890	62	101,917
4	4	006 575	35	057,534	63	103,561
5	5	008,219	36	059,178	64	105 205
6	6	009 863	37	060 821	65	106,849
7	7	0011 506	38	0062,465	66	0108,493
8	8	013 150	39	064,109	67	110,136
9	9	014 794	40	065 753	68	111,780
10	10	016 438	41	067,398	69	113,424
11	11	018 082	42	069 941	70	115 068
12	12	0019 726	43	0070,684	71	0116 712
13	13	021,369	44	072,328	72	118,356
14	14	023 013	45	073,972	73	120,000
15	15	024 657	46	075,616	74	121,643
16	16	026 301	47	077,260	75	123,287
17	17	0027,945	48	0078,904	76	0124,931
18	18	029,589	49	080 547	77	126,575
19	19	031 232	50	082,957	78	128,219
20	20	032,876	51	083 835	79	129,863
21	21	034 520	52	085 479	80	131,506
22	22	0036,164	53	0087,123	81	0133 150
23	23	037,808	54	088 767	82	134 794
24	24	039 452	55	090 410	83	136 438
25	25	041,095	56	092 054	84	138,082
26	26	0042,739	57	093,964	85	0139,726
27	27	044 383	58	0065 342	86	141,369
28	28	046 027	59	0096,986	87	143 013
29	29	047,671			88	144 657
30	30	0049,315			89	0146,301
31	31	0050 958			90	0147 945

Tables of Interest at 6 per Centum.

	D.	May	D.	April	D	June
1	91	0149.589	121	0198.904	152	249.862
2	92	0151.232	122	0200.547	153	251.506
3	93	0132.876	123	0202.191	154	253.150
4	94	0154.520	124	0203.835	155	0254.794
5	95	156.164	125	205 479	156	256.438
6	96	157.800	126	207.123	157	258.082
7	97	159.452	127	208.767	158	259.726
8	98	0161.090	128	0210.410	159	0261.369
9	99	162.739	129	212.054	160	263.013
10	100	164.383	130	213.698	161	264.657
11	101	166.027	131	215.342	162	266.301
12	102	0167.671	132	0216.986	163	0267.945
13	103	169.315	133	218.630	164	269.589
14	104	170.958	134	220.273	165	271.232
15	105	172.602	135	221.917	166	272.870
16	106	0174.246	136	0223.561	167	0274.520
17	107	175.890	137	225.205	168	276.164
18	108	177.534	138	226.849	169	277.808
19	109	179.178	139	228.493	170	279.452
20	110	0180.821	140	0230.136	171	0281.095
21	111	182 465	141	231.780	172	282.739
22	112	184.109	142	233.424	173	284 383
23	113	185.753	143	235.068	174	286.027
24	114	0187.397	144	0236.712	175	0287 671
25	115	189.041	145	238.356	176	289.315
26	116	190.684	146	240.000	177	290.958
27	117	192 328	147	241.643	178	292.602
28	118	0193.972	148	0243.287	179	0294.246
29	119	195.616	149	0244.931	180	0295.890
30	120	197.260	150	0246.575	181	0297.534
31			151	0248.219		

Tables of Interest at 6 per Centum.

D.	July	D.	August	D.	Septemb
182	0299 678	213	0350.130	244	0401.095
183	0300.821	214	0351.780	245	0402.739
184	302 465	215	353.424	246	404.363
185	304.109	216	355.068	247	406.027
186	0305.763	217	0356.712	248	0407.671
187	307.397	218	358.356	249	409.315
188	309.641	219	360.200	250	410.958
189	310.684	220	361.643	251	412.602
190	312.328	221	363.287	252	414.246
191	0313.972	222	0364.931	253	0415.890
192	315.616	223	366.575	254	417.534
193	317.260	224	368.219	255	419.178
194	318.904	225	369.863	256	420.801
195	320.547	226	371.506	257	422.465
196	0322.191	227	0373.150	258	0424.109
197	323.830	228	374.794	259	425.753
198	325.479	229	376.438	260	427.397
199	327.123	230	378.082	261	429.041
200	328.767	231	379.726	262	430.684
201	0330 410	232	0381.369	263	0432.328
202	332.054	233	383.013	264	433.972
203	333.698	234	384.657	265	435.616
204	335.542	235	386.301	266	437.260
205	336.986	236	387.945	267	438.904
206	0338.630	237	0389.589	268	0440 547
207	340.277	238	391.232	269	442.191
208	341.917	239	392.876	270	443.835
209	343 561	240	394.520	271	445.479
210	345.205	241	396.164	272	0447.123
211	0346.849	242	0397.808	273	0448.767
212	0348.493	243	0399.452		

Tables of Intereſt at 6 per Centum.

	D.	October.	D.	Novemb.	D.	Decemb
1	274	0450.410	305	0501.369	335	0550.604
2	275	04520 54	306	0503.013	336	0552.328
3	276	453.698	307	504.657	337	553.972
4	277	455.342	308	506.301	338	555.616
5	278	456.986	309	507.945	339	557.260
6	279	458.630	310	509.589	340	558.904
7	280	0490.273	311	0511.230	341	0560 547
8	281	461.917	312	512.876	342	562.191
9	282	463.561	313	514.520	343	563.835
10	283	465.205	314	516.164	344	565.479
11	284	466.849	315	517.808	345	567.123
12	285	0468.493	316	0519.452	346	0568.707
13	286	470.136	317	521.095	347	570.410
14	287	471.780	318	522.739	348	572.054
15	288	473.424	319	524.383	349	573.698
16	289	475.068	320	526.027	350	575.342
17	290	0476.712	321	0527.671	351	0576 986
18	291	478.356	322	529.315	452	578.630
19	292	480.000	323	530.958	353	580.273
20	293	481.643	324	532.608	354	581.917
21	294	483.287	325	534.246	355	583.561
22	295	484.932	326	0535.890	356	0585.205
23	296	486.575	327	537.534	357	586.849
24	297	488.219	328	539.178	358	588.493
25	298	489.863	329	540.821	359	590.136
26	299	0491.506	330	0542.465	360	0591.780
27	300	493.150	331	544.109	361	593.424
28	301	494.794	332	545.753	362	595.468
29	302	496.438	333	547.397	363	596.712
30	303	0498.082	334	0549.041	364	0598.356
31	304	0499.726			365	0600.000

The uſe of theſe Tables are thus.

THe Tables are ſo plain, that I ſuppoſe they need no demonſtration, being made in the form of a plain Almanack; only I ſhall ſhew the uſe thereof in two or three examples.

I. *If a Bond be dated the* 10*th. of* February, *when is the half year, or* 183 *dayes out?*

Firſt, in theſe Table you ſhall find againſt the 10th. of *February* the number 41, which ſhews, it is the one and fortieth day from the beginning of the year: and then if you adde 183 dayes being the half year to this 41, it makes 224 dayes. Then look forward till you find this number, which you ſhall find in this Table againſt the 12th. of *Auguſt*, and this is the day when the half year is finiſhed.

II. *How many dayes is it from the* 10*th. of* Auguſt, *to the laſt of* December.

In this you muſt ſubſtract the latter time out of the former time. Thus, againſt the laſt of *December*, you ſhall find 365 dayes, and againſt the 10th. of *Auguſt* 222 dayes, which ſubſtracted out of the other, there remains

mains 143, and ſo many as the dayes required.

I put down this queſtion becauſe many times it will be needful to know the dayes which fall out in ſeveral years, and ſo the number out of which you ſhould ſubſtract, will be leſs than the number which you ſhould ſubſtract out of it; in this caſe you may firſt find the dayes to that years end, and then add the leſſer number which falls out in the year following thereunto.

III. *Thus if you would know how many days it is from the tenth of Auguſt to the ninth of* February.

Firſt, from the tenth of *Auguſt* to the years end, as before was found to be 143 dayes; and to this if you adde the dayes found againſt the ninth of *February*, which are 40. it will make 183 dayes, or half a year, and not the 12. of *February*, as I noted before.

The like you may do for any other number of dayes, or any other time of a year; only take notice, that the year conſiſting of 365 dayes, the parts thereof exactly are thus.

One month, or a twelfth part of a year, is 30 dayes 10 hours.

Three months, or one quarter, 91 dayes, 6 hours. Six

Six months, or an half, 182 *dayes,* 12 *hours.*
Nine months, or three quarters, 273 *dayes,* 18 *hours.*

But to keep without danger of the Statute, and to allow some favour to the borrower, if you reckon the parts of the Interest money by the time, then reckon thus,
For one month, or the twelfth part of a year, 31 *dayes.*
For three months, or one quarter, 92 *dayes.*
For six months, or an half, 183 *dayes.*
For nine months, or three quarters, 274 *dayes.*

IV. *To know what is the true use of any sum of money for any number of dayes, after the rate of* 6 per Centum.

Having found out the true number of dayes as is before shewed; find out this number of dayes in the Table, and there you shall find in a decimal Fraction the true Interest of one pound for the said time: So that the proportion will be thus.

As 1 *l. or* 1.000,000
To the number in the Tables.
So any number of pounds inquired,
To the like number required.

Take this number therefore and multiply it by your principal summe, and then cut

cutting off the ſeven laſt figures toward your right hand, the remainder will ſhew you the pounds which it comes to, and the figures cut off, they are a fraction of a pound. But now in the valuation thereof, you need make uſe but of the four firſt figures, reckoning the firſt figure doubled, and it will ſhew the ſhillings; if the ſecond figure be more than five, take five out of it, and reckon one ſhilling more for it; laſtly the remainder of that above five, and the next following figure will ſhew the farthings very near, if you abate but one in 25. Or you may find the true value of theſe firſt four figures in the decimal Table, *page* 26.

For Example.

What is the Intereſt of 555 pounds for about half a year, or 182 dayes?

The number againſt 182 *dayes is*

	0299178
This multiplied 555	555
	1495890
	1495890
	1495890
Yields	16|6040,790

Which, according to the former Rules & Tables, comes to 16 pound 12 ſhillings, 1 penny, and a little more, *viz.* ſcarce two tenth parts of a farthing. And

And thus you may do for any other number of even pounds: and if you think this too much labour, then if your principal money be not very much, you need take out but the first 4 figures of the Tables to be multiplied (which are therefore separated from the rest by this point [.]) and then you must cut off but 4 figures from the product, and those remaining will exactly agree with the decimal Table.

Thus, the four first figures of the former number being 0299
Multiplied by 555

	1495
1	459
14	95
Yields 16	5945

Which is 16 *l.* 12 *s.* very near.

But if you will be more exact, and know also the Interest of shillings and pence, if there be any shillings and pence belonging to your principal summe; you must first reduce them into one decimal fraction, by the Table, and then take the 4 first figures of this number in the Table, and multiply them together. And observe how many figures you multiply by, and cut off so many figures from the end of the product

duct, the reſt of the figures; if they be three, put one cipher before them; if they be two, put two ciphers before them, to make them agree to the 4 places in the Decimal Table, and ſeek that ſum in the Decimal Table, which will ſhew you the true value thereof. Note, that it cannot exceed 0600, which is 1 ſhilling 2 pence, and 40 hundred parts.

Thus for example, if your principal ſumme were 555 pound, 11 ſhillings, the Intereſt of the 11 ſhillings muſt thus be found:

The Intereſt for 182 *dayes is*	,0299
11 *ſhill. reduced into decimals is*	55
	1495
	1495
	,0164|45

By cutting off the two laſt figures, and adding one cipher to the beginning to make the three figures to four places; the ſum is 0164: which in the decimal Table ſhews 4 pence very near.

Or yet more exactly, if you adde this to your former product of the 555 *l.*

	li.
which was	16, 6043, 790
and this laſt	,0164, 45
In all	16, 6208, 240

So the whole Intereſt appears to be 16 pound, 12 ſhillings, 5 pence.

But, methinks I hear ſome taxing me for being ſo ſcrupulous in accounting the Intereſt of money by dayes, and not rather teach ſome way, how a juſt abatement ſhould be made for thoſe payments which are made before the year is fully out. For the Act allows to take 6 pound in the hundred for the whole year; now if a man takes 3 pound *per Centum* for the half year; the ſaid 3 pound in the other half year will yield, at the ſame rate, 1 ſhilling, 9 pence, 2 farthings; and thus, ſome think, a man takes more than the Act allows, and comes within the danger thereof.

But the Law herein looks upon the year as the fitteſt meaſure of time to proportion the Intereſt by; and the intent of the law is to reſtrain the groſſer abuſes of Extortioners, and not to take notice of ſuch nicities as this; which would have made it either very large and tedious, by appointing exact Tables for it, moneth by moneth, nay, day by day; or elſe intricate and full of ſnares for men to fall into. The plain meaning of the Law is this; that, as a year ſhould meaſure the time, ſo the ſaid 6 pound ſhould proportion the Intereſt; the parts of the one anſwering to the parts of the

the other; neither allowing any Intereſt upon the Intereſt, for the time under or over a year, nor tying any man to let or take up money for the whole year.

The uſual cuſtom therefore in this caſe is a good Comment upon this Law; by which moſt Bonds of this nature are made to be paid at ſix months end, and yet the full half of the whole years Intereſt allowed, which would never have been ſo long and frequently done, if it had been thought any breach of the Statute.

And therefore, though there might be an allowance made by way of rebatement, and the caſe may ſeem ſomewhat like, yet it is not the ſame; neither doth the ſtricteſt rebatement uſed among Merchants, take any notice thereof, but is grounded upon another cauſe, as you may ſee more in the next particular.

Of Rebatement.

MErchants, though they ſeldom let out Money to uſe, yet they often take up much; and that not only the common way by Bond, which I ſpake of before, but by way of Rebatement; which is thus.

A Merchant being to ſell any commodity he either ſells it for ready money, or to be paid at a certain time, *viz.* 3, 6, or 12 Moneths after. But the bargain being thus made, it often falls out, that with good convenience to the buyer, or ſeller, or both; to have this money paid before it be due; and then there is and ought to be an allowance or abatement between them out of the principal, according to the rate of Intereſt money allowed at that time.

Now this rebatement hath been uſually reckoned by the Table of ordinary Intereſt, abating ſo much out of the principal debt, as the uſe of the ſaid principal would come to in the time agreed upon. But in reckoning thus, there will alwayes be ſome damage to the Creditor who doth abate, which though in little ſummes, will not be much

much, yet in greater ſummes of money, ſuch as this rebatement is moſt uſed in, it will be very conſiderable, and is of late obſerved by the moſt skilful Merchants.

For Example.

The Intereſt of an hundred pound for ſix months, comes to 3 pound. But now ſuppoſe *A* oweth to *B* an hundred pound, to be paid ſix months hence: and *A* and *B* are agreed to give and take rebate; here I ſay *B* ought not to abate full 3 *l.* out of his 100 l. as the Table of Intereſt will ſhew, but ſomewhat leſs. Indeed, if the debt had been 103 pound, then there ſhould have been 3 pound abated out of the debt; but there being but an hundred pound due in all, and that not till the end of ſix months, there muſt be ſo much a leſs proportion for the abatement, as there is a difference between 103 and 100. which may be thus found by the rule of proportion.

li. *li.* *li.* *li.*

As 103 *to* 100. *ſo* 100. *to* 97. 0874.

Which is 97 pound, 1 ſhilling, 9 pence. So that there is only 2 pound, 18 ſhillings, 3 pence to be abated, and not 3 pound, as by the other reckoning.

Therefore if you would find out the worth of any debt, due hereafter in ready money;

money; Firſt find out by the Tables of Intereſt, what an hundred pound will yield in the time deſired: then work by the rule ofproportion thus,

As an 100 *pound, with the Intereſt thereof for that time,*

Is to an 100 *pounds;*

So the debt to be paid at that time

To its worth in ready money.

Thus, to find the worth of an hundred pound, due 12 moneths hence.

As 106 to 100; ſo 100 to 94. 3396. which is 94 pound, 6 ſhillings, 9 pence 2 farthings. So that here is not ſix pounds to be abated out of the 100 pound, (as ſome have thought) but 5 pound, 13 ſhillings, 2 pence, 2 farthings. And thus the Creditour may ſave 6 ſhillings, 9 pence, 2 farthings, which by the other way of reckoning he will rebate in his own wrong, And if the ſumme be greater, or the time of payment longer, his damage will be more.

Again you ſee that this money to be rebated doth not increaſe equally, in an equal time; there was 2 pound, 18 ſhillings, 3 pence to be abated out of the 100 pound, due at 6 months, but there is 5 pound, 13 ſhillings, 2 pence, 2 farthings to be abated for the 100 pounds due at 12 moneths; which

which is not the double of the other, for so it ſhould have been, 5 pound, 16 ſhillings, 6 pence. So that theſe Tables muſt be caſt up for every Month at the leaſt, which is the moſt uſual way of reckoning the times of payments among Merchants, and thus I have drawn them out to 24 Moneths, which is as long (I think) as any Merchant deſires to truſt, or will be content to rebate for.

Rebate

Rebate at 6 per Cent.

	1 Month				2 Months				3 Months.			
	li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill. 5				3			0	59				89
10				60			1	19			1	77
15				90			1	78			2	66
1			1	19			2	37			3	54
2			2	39			4	75			7	09
3			3	58			7	12		1	0	64
4			4	78			9	50		1	2	18
5			5	97			11	87		1	5	73
6			7	17		1	2	25		1	9	28
7			8	36		1	4	62		2		8
8			9	56		1	7	00		2	4	37
9			10	7		1	9	37		2	7	92
Pounds. 10			11	94		1	11	76		2	11	47
20		1	11	88		3	11	52		5	10	93
30		2	11	82		5	11	29		8	10	40
40		3	11	76		7	11	05		11	9	87
50		4	11	70		9	10	81		14	9	34
60		5	11	64		11	10	58		17	8	80
70		6	11	59		13	10	34	1	0	8	27
80		7	11	53		15	10	10	1	3	7	74
90		8	11	47		17	09	86	1	6	7	21
100		9	11	41		19	9	62	1	9	6	68
200		19	10	00	1	19	7	24	2	19	1	36
300	1	9	10	80	2	19	4	87	4	8	8	04
400	1	19	9	61	3	19	2	49	5	18	2	72
500	2	9	9	61	4	19	0	12	7	7	9	40
600	2	19	8	01	5	18	9	74	8	17	4	08
700	3	9	7	82	6	18	7	37	10	6	10	76
800	3	19	7	22	7	18	4	99	11	16	5	44
900	4	9	6	63	8	18	2	61	13	5	0	12
1000	4	19	6	03	9	18	0	23	14	15	6	76

Rebate at 6 per Cent.

		4 Months.			5 Months.			9 Months.		
		li.	sh.	d. c.	li.	sh.	d. c.	sh.	d.	c.
Shill.	5			1 18			1 46		1	75
	10			2 35			2 93		3	49
	15			3 53			4 39		5	25
Pounds	1			4 70			5 85		6	99
	2			9 41			11 71	1	1	98
	3		1	2 12		1	5 56	1	8	97
	4		1	6 82		1	11 41	2	3	96
	5		1	11 53		2	5 27	2	10	95
	6		2	4 24		2	11 12	3	5	94
	7		2	8 94		3	4 97	4	0	93
	8		3	1 60		3	10 83	4	7	92
	9		3	6 25		4	4 68	5	2	91
Pounds	10		3	11 00		4	19 54	0	9	90
	20		7	10 12		9	9 07	11	7	80
	30		11	9 10		14	7 61	17	5	70
	40		15	8 23		19	6 15	1	3	61
	50		19	7 29	1	4	4 68	1	9	51
	60	1	3	6 35	1	9	3 22	1	14	42
	70	1	7	5 41	1	14	11 70	2	0	32
	80	1	11	4 47	1	19	00 29	2	6	22
	90	1	15	3 53	1	3	10 85	3	10	23
	100	1	19	2 59	2	00	9 36	2	10	03
	200	3	18	5 18	4	17	6 73	5	16	06
	300	5	17	7 76	7	6	4 10	8	14	09
	400	7	16	10 53	9	15	1 46	11	13	12
	500	9	16	0 94	12	3	10 83	14	11	14
	600	11	15	3 35	14	12	8 19	17	9	17
	700	13	14	6 12	17	1	5 56	20	7	20
	800	15	13	8 70	19	10	2 93	23	6	23
	900	17	12	11 29	21	19	0 29	26	4	26
	1000	19	12	1 88	24	7	9 66	29	2	29

Rebate at 6 per Cent.

	7 Months.				8 Months.				9 Months.			
	li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill. 5			2	03			2	31			2	5
10			4	06			4	61			5	17
15			6	00			6	91			7	73
Pounds 1			8	11			9	23			10	33
2		1	4	23		1	6	46		1	8	67
3		2	0	35		2	3	69		2	7	00
4		2	8	46		3	0	92		3	5	34
5		3	4	58		3	10	15		4	3	67
6		4	0	69		4	7	38		5	2	01
7		4	8	83		5	4	62		6	0	34
8		5	4	93		6	1	85		6	10	68
9		6	1	04		6	11	08		7	9	01
10		6	9	16		7	8	31		8	7	35
20		13	6	32		15	4	61		17	2	70
30	1	0	3	48	1	3	0	92	1	5	10	05
40	1	7	0	64	1	10	9	23	1	14	5	40
50	1	13	9	80	1	18	5	54	2	3	0	75
60	2	0	6	96	2	6	1	85	2	11	8	10
70	2	7	4	12	2	13	10	15	3	0	3	45
80	2	14	1	28	3	1	6	46	3	8	10	80
90	3	0	10	44	3	9	2	77	3	17	6	15
100	3	7	7	59	3	16	11	18	4	6	1	49
200	6	15	3	19	7	13	10	15	8	12	2	98
300	10	2	10	78	11	10	9	23	12	18	4	48
400	13	10	6	38	15	7	8	31	17	4	5	97
500	16	18	1	97	19	4	7	38	21	10	7	46
600	20	5	9	57	23	1	6	46	25	16	8	95
700	23	12	5	16	26	18	5	54	30	2	10	45
800	27	1	0	76	30	15	4	61	34	8	11	94
900	30	8	8	35	34	12	3	69	38	15	1	44
1000	33	16	3	95	38	9	2	77	43	1	2	93

Rebate at 6 per Cent.

		10 Months.				11 Months.				12 Months.			
		li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill.	5			2	85			3	13			3	40
	10			5	71			6	25			6	79
	15			8	57			9	38			10	19
Pounds	1		0	11	43		1	0	51		1	1	58
	2		1	10	86		2	1	02		2	3	17
	3		2	10	29		3	1	53		3	4	75
	4		3	9	71		4	2	04		4	6	34
	5		4	9	14		5	2	56		5	7	92
	6		5	8	57		6	3	07		6	9	51
	7		6	8	00		7	3	58		7	11	09
	8		7	7	43		8	4	09		9	0	68
	9		8	6	86		9	4	61		10	2	26
Pounds	10		9	6	28		10	5	12		11	3	85
	20		19	0	57	1	0	10	23	1	2	7	70
	30	1	8	6	86	1	11	3	35	1	13	11	55
	40	1	18	1	14	2	1	8	47	2	5	3	40
	50	2	7	7	43	2	12	1	59	2	16	7	25
	60	2	17	1	71	3	2	6	71	3	7	11	15
	70	3	6	8	00	3	12	11	83	3	19	12	95
	80	3	16	2	29	4	3	4	95	4	10	16	00
	90	4	5	8	57	4	13	10	7	5	1	10	65
	100	4	15	2	86	5	4	3	18	5	13	2	49
	200	9	10	5	71	10	8	6	37	11	6	4	98
	300	14	5	8	57	15	12	9	55	16	19	7	47
	400	19	0	11	53	20	17	0	74	22	12	9	99
	500	23	16	2	29	26	1	3	92	28	6	0	45
	600	28	11	5	15	31	5	7	11	33	19	2	94
	700	33	6	8	00	36	9	10	29	39	12	5	43
	800	38	1	10	86	41	14	1	48	45	5	7	93
	900	42	17	1	72	46	18	4	66	50	18	10	42
	1000	47	12	4	57	52	2	7	85	56	12	0	90

Rebate at 6 per Cent.

		13 Moneth.			14 Months.			15 Months.		
		li.	sh.	d. c	li.	sh.	d. c.	li.	sh.	d. c
Shill.	5			3 66			3 92			4 19
	10			7 32			7 85			8 37
	15			10 08			11 70			1 0 56
Pounds	1		1	2 64		1	3 70		1	4 74
	2		2	5 29		2	7 40		2	9 49
	3		3	7 94		3	11 10		4	2 23
	4		4	10 59		5	2 80		5	6 96
	5		6	1 24		6	6 50		6	11 72
	6		7	3 89		7	10 20		8	4 47
	7		8	6 53		9	1 90		9	9 21
	8		9	9 18		10	5 61		11	1 96
	9		10	11 83		11	9 21		12	6 70
	10		12	02 48		13	1 1		13	11 44
	20	1	4	4 96	1	6	2 2	1	7	10 88
	30	1	16	7 44	1	19	3 3	2	1	10 32
	40	2	8	9 91	2	12	4 4	2	15	9 76
	50	3	1	0 39	3	05	5 5	3	9	9 21
	60	3	13	2 87	3	18	6 6	4	3	8 65
	70	4	5	5 45	4	11	7 7	5	7	8 9
	80	4	17	7 83	5	4	8 8	5	11	7 53
	90	5	9	10 31	5	17	9 9	6	5	6 98
Pounds	100	6	2	0 79	6	10	10 09	6	19	6 41
	200	12	4	1 58	13	1	8 19	13	19	0 83
	300	18	6	2 37	19	12	6 28	20	18	7 25
	400	24	8	3 15	26	3	4 37	27	18	1 67
	500	30	10	3 94	32	14	2 47	34	17	8 9
	600	36	12	4 73	39	5	0 56	41	17	2 51
	700	42	14	5 52	45	15	10 65	48	16	8 93
	800	48	16	6 31	52	6	8 75	55	16	3 35
	900	54	18	7 10	58	17	6 84	62	15	9 77
	1000	61	00	7 89	65	8	4 93	69	15	4 08

Rebate at 6 per Cent.

	16 Moneth.				17 Months.				18 Months.			
	li.	sh.	d.	c	li.	sh.	d.	c.	li.	sh.	d.	c
Shill. 5			4	44			4	70			4	95
10			8	29			9	40			9	91
15		1	1	33		1	2	10		1	2	86
Pounds 1		1	5	78		1	6	80		1	7	82
2		2	11	55		3	1	60		3	3	63
3		4	5	33		4	8	40		4	11	45
4		5	11	11		6	1	21		6	7	27
5		7	4	89		7	10	01		8	3	08
6		8	10	67		9	4	81		9	11	90
7		10	4	44		10	11	61		11	6	72
8		11	10	22		12	6	41		13	2	53
9		13	4	00		14	1	22		14	10	35
Pounds 10		14	9	78		15	8	02		16	6	16
20	1	9	7	55	1	11	4	04	1	13	0	33
30	2	4	5	33	2	7	0	06	2	9	6	50
40	2	19	3	11	3	2	8	07	3	6	0	66
50	3	14	0	89	3	18	4	09	4	2	6	83
60	4	8	10	67	4	14	0	11	4	19	0	99
70	5	3	8	44	5	9	8	13	5	15	6	16
80	5	18	6	22	6	5	4	15	6	12	0	33
90	6	13	4	00	7	1	0	17	7	8	7	49
100	7	8	1	78	7	16	8	18	8	5	1	65
200	14	16	3	55	15	13	4	37	16	10	3	30
300	22	4	5	33	23	10	0	55	24	15	4	95
400	29	12	7	11	31	6	8	74	33	00	6	61
500	37	0	8	89	39	3	4	92	41	05	8	26
600	44	8	10	67	47	0	1	11	49	10	9	91
700	51	17	0	40	54	16	9	29	57	15	11	56
800	59	5	2	22	62	13	5	48	66	1	1	21
900	66	13	4	00	70	10	1	66	74	6	2	87
1000	74	1	5	78	78	6	9	84	82	11	4	51

Rebate at 6 per Cent.

	19 Month				20 Months				21 Months.			
	li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill. 5			5	20			5	45			05	70
10			10	41			10	91			11	40
15		1	3	62		1	4	36		1	05	10
Pounds. 1		01	09	82		01	09	82		01	10	80
2		03	05	64		03	07	64		03	09	61
3		05	02	46		05	05	46		05	08	42
4		06	11	29		07	03	27		07	07	22
5		08	08	11		09	01	19		09	06	03
6		10	04	93		10	10	91		11	04	83
7		12	01	75		12	08	73		13	03	64
8		13	10	57		14	06	55		15	02	45
9		15	07	40		16	04	37		17	01	25
Pounds. 10		17	04	22		18	02	18		19	00	05
20	1	14	08	44	1	16	04	36	1	18	00	11
30	2	12	00	66	2	14	00	54	2	17	00	16
40	3	09	04	88	3	12	08	72	3	16	00	22
50	4	06	09	10	4	10	10	91	4	15	00	27
60	5	04	01	32	5	09	01	09	5	14	00	33
70	6	01	05	54	6	07	03	27	6	13	00	38
80	6	18	09	76	7	05	05	45	7	12	00	44
90	7	16	01	08	8	03	07	64	8	11	00	49
100	00	13	06	19	9	01	09	82	9	10	00	54
200	17	07	00	38	18	03	07	64	19	00	01	08
300	26	00	06	57	27	05	05	46	28	10	01	63
400	34	14	00	77	36	07	03	27	38	00	02	17
500	43	07	06	96	45	09	01	09	47	10	02	71
600	52	01	01	15	54	10	10	91	57	00	03	26
700	60	14	07	34	63	12	08	78	66	10	03	80
800	69	08	01	53	72	14	06	55	76	00	04	34
900	78	01	07	73	81	16	04	37	85	10	04	89
1000	86	15	01	92	90	18	02	18	95	00	05	43

Rebate at 6 per Cent.

		22 Months				23 Months				24 Months.			
		li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill.	5			5	94			6	19			06	43
	10			11	89		1	0	38		1	00	85
	15		1	5	84		1	6	57		1	07	28
Pounds.	1		1	11	78		2	0	75		2	1	71
	2		3	11	56		4	1	51		4	3	43
	3		5	11	35		6	2	26		6	5	14
	4		7	11	13		8	3	01		8	6	86
	5		9	10	92		10	3	77		10	8	57
	6		11	10	70		12	4	52		12	10	29
	7		13	10	49		14	5	27		15	0	0
	8		15	10	27		16	6	3		17	1	72
	9		17	10	5		18	6	78		19	3	42
Pounds.	10		19	9	84	1	0	7	53	2	1	5	14
	20	1	19	7	67	2	1	3	6	2	2	10	28
	30	2	19	5	51	3	1	10	60	3	4	3	43
	40	3	19	3	35	4	2	6	13	4	5	8	57
	50	4	19	1	19	5	3	1	67	5	7	1	71
	60	5	18	11	3	6	3	9	20	6	8	6	86
	70	6	18	8	86	7	4	4	74	7	10	0	0
	80	7	18	6	70	8	5	0	27	8	11	5	14
	90	8	18	4	54	9	5	7	80	9	12	1	28
	100	9	10	2	38	10	6	63	34	10	14	3	43
	200	19	16	4	76	20	12	6	7	21	8	6	86
	300	29	14	7	14	30	17	10	1	32	2	10	29
	400	39	12	9	51	41	5	1	35	42	17	1	71
	500	49	10	11	89	51	11	4	68	53	11	5	14
	600	59	9	2	27	61	17	8	2	64	5	8	57
	700	69	8	4	65	72	3	11	36	75	0	0	0
	800	79	5	7	3	82	10	2	69	85	14	3	43
	900	89	5	9	41	92	16	6	3	96	8	6	86
	1000	99	1	11	78	103	2	9	36	107	2	10	28

The use of these Tables.

I. WHat is the rebate out of 500 pound due 6 months hence, to be paid at present; & so how much ready mony will satisfie the said debt of 500 pound?

By the Table you shall find that fourteen pound, eleven shillings, three pence, and half a farthing, is to be abated.

	li. sh. d.
So that, *the debt being*	500. 00. 00
The rebatement to be substracted	14. 11. 3
So there remains	485,08.09

And so much ready money will satisfie the said debt.

II. If you cannot find the whole debt in one line of the Tables, or if the debt be to be paid at two or three payments, then you must take it out of the Tables severally, and then adde them together.

As suppose *A* hath sold a Bargain to *B* of 1500 pound, to be paid at three six months 500 pound at a time: what is the value of it in ready money?

	li. sh, d. q.
The debt is	1500 00 00 00
Rebate of 500 *l. for six months*	14 11 03 0
Rebate of 500 *l. for* 12 *months*	28 06 00 2
Rebate of 500 *l. for* 18 *months.*	41 05 08 1
The Sum of the Rebates	84 02 11 3
Which ſubſtracted from the whole debt, there remains	1415 17 00 1

The money which muſt be paid at preſent.

III. There is another kind of Rebatement by way of reducing divers times of payment all into one, which is many times uſed, but yet it is not altogether ſo exact as it ſhould be,

For Example.

Suppoſe the ſaid debt of 1500 *l*, to be paid at there ſix months, what time will the whole debt be due to be paid altogether?

The rule is thus: Firſt, multiply the ſummes of mony, by the times of their payment, and adde the ſeveral products together; thus,

500

500 *pounds* By 6 *moneths.*	500 *pounds* by 12 *months.*	500 *pounds* by 18 *months*
is 3000	is 6000	9000
		6000
Which three added together,		3000
The ſumme of them all is		18000

And this product divided by the whole debt 1500 pound, the quotient will ſhew 12 months for the time of payment.

This falls out exactly, if you make your rebate according to the Tables of Intereſt.

For Example.

The Intereſt of	l.	ſh.	d.
500 *l. for 6 month is*	15	00	0
500 *l. for 12 months is*	30	00	0
500 *l. for 18 months is*	45	00	0
In all	90	00	0
And ſo alſo the Intereſt of 500 *l. for 12 months is*	90	00	0

But here you may ſee the difference in reckoning theſe manner of payments, by the Tables of Intereſt, and by the Tables of rebate.

By the one the rebate is	90	00	0

By the other the rebate is but	84030
So there is ſaved by this reckoning	05 17 0

Yet this rule of reckoning the time of payment will not be much out of the way, if you reckon the money by the Tables of rebate. For if the ſaid 1500 pound were to be paid at 12 months, then the worth of it in ready mony would appear to be but 1415 pound, 1 ſhilling, 10 pence, 2 farthings, whereas the true value of the debt in ready money was before found to be 1415 pound, 17 ſhillings, 1 farthing: by this means therefore the creditor will loſe only 15 ſhillings one penny, 3 farthings more then he ought to rebate.

Yet this way of reducing of payments comes ſo near the exact truth, that I cannot preſcribe a better way in general, to find it out. But if any will be ſo punctual, and think it worth their labour, let them try one by the other, & ſo finding the difference which here is 15 ſhillings; find out by the Tables of Intereſt, in how many dayes the 1500 pound will require 15 ſhillings Intereſt; and you ſhall find the neareſt time is 3 dayes. For the Intereſt of 1500 pound for 3 dayes is 14 ſhillings, 9 pence: theſe 3 dayes therefore being taken from the 12 months aforeſaid, ſhews the true time due for the pay-

payment of the whole 1500 pound.

IV. If any will be ſo ſtrict in their Rebatements, as to look after any time under a moneth; they may by the former Tables of Intereſt, find out the Intereſt of their principal debt for the odde dayes, and add that to the rebatement for the months, without much error.

But if they will be more exact, let them by the Tables of daily Intereſt, find out the Intereſt of 100 pound for the time deſired, and work by the former rule, according to the rule of proportion.

Thus, if you would know the rebate out of an hundred pound for 190 days.

The Intereſt for 190 dayes is 3 pound, 1200 parts. Therefore,

As 103, 1200 to 100; ſo 100 to 96, 9744. which is 96 pound, 19 ſhillings 6 pence *ferè*.

And thus much for theſe Tables of intereſt. All that I have ſaid hitherto hath been about Intereſt either ſimple or compound, by which you may ſee the good uſe which may be made thereof, and how the abuſe may be avoided and prevented.

And here I thought to have put an end to this little Book. But ſince there are many other things of a general concernment, and not impertinent to the former Diſcourſe, I ſhall adde ſomewhat concerning a few of them, as briefly as I can.

THE PURCHASERS PATERN:

The Second Part.

Shewing
The Measuring of *Board*, *Land*, *Timber*, *Stone*, and the Gauging of *Cask*.

With many other Rules and Tables of daily use for most Men.

By *Henry Philips*.

London Printed 1676.

To the Reader.

HE that hath any thing to do with Land or Houſes, will have ſome occaſion to have ſome knowledge in the Art of Meaſuring Land, Board, Timber, and ſuch like; and therefore I thought good to adjoyn thoſe Geometrical Obſervations, to the former Diſcourſe: whereby thoſe, whoſe Genius leads them any thing this way, may attain ſome good knowledge therein, and receive much profit thereby.

The other things likewiſe are of ſuch general concernment, and frequent uſe, that they will be profitable to moſt: and therefore though they are more commonly written of, yet I hope you will find ſomewhat therein worth your reviews and acceptance.

Geo.

Geometrical Obſervations.

Of meaſure, which conſiſts onely in length.

THree Barly Corns make one inch,
Twelve Inches make one foot.

Three foot make one yard; which is the common *Engliſh* meaſure, wherewith moſt *Engliſh* Commodities are meaſured. As for the Ell, though it be commonly uſed among us, yet the Statute takes little or no notice of it, it being a forreign meaſure, and uſed about Forreign Commodities, as Silks and *French* Linnens. The length of the Ell is five quarters of our Yard; ſo that five Yards are four Ells.

Theſe are the meaſures, by which all ſmall quantities are meaſured; but for meaſuring of Land they make uſe of Poles or Rods.

16 *foot and an half make a Pole or Perch.*
40 *Poles make a Furlong.*
3 *Furlongs make a Mile.*

So that in a meaſured Mile, there are

Poles

Poles 320
Yards 1760
Feet 5280
Inches 63360
Barley-Corns 190080

But the miles commonly accounted from one place to another are more, unleſs within 20 miles round off *London*.

To meaſure things which have length and breadth, as Board, Glaſs, Pavements, Tyling, Wainſcot, and ſuch like.

THeſe things are all meaſured after the ſame way, only there is a difference in the meaſure by which they are meaſured. For Board and Glaſs are meaſured by the foot; Wainſcot, Pavements, &c. by the Yard.

Now in meaſuring any of theſe, one Inch, Foot, or Yard, is not only ſo much in length, but ſo much in breadth too, that is, ſo much ſquare; or if it lacks of it one way, it muſt be made up the other way. So that upon this account there is

9 ſquare feet in one yard.
144 ſquare inches in one foot.
72 ſquare inches in half a foot.
36 ſquare inches in a quarter of a foot.

Now in the meaſuring of any of theſe things,

things, you must consider what form or fashion it is of; and accordingly there are several rules.

First, for Boards, they are usually cut out in long squares. And to measure such, you must first take the breadth thereof in Inches and likewise the length thereof in Inches; and multiply them one by the other; so you shall have the content therof in inches; then to know how many feet it is, divide this number by 144, the square inches in one foot, and the quotient will shew the number of Feet; and if any thing remain, it is so many square Inches, which you may value by the former Table.

10	60

Thus for Example. Suppose a Board to be 10 Inches broad, and 5 foot, or 60 Inches long; Multiply 60 by 10 it makes 600, which divided by 144, the quotient will be 4, and there remains 24. So that the board is four feet, and two thirds of one quarter of a foot.

This is the usual form of Boards, only some-

ſometimes they are a little narrower at one end than at the other; in this caſe you may take the breadth in the middle of the board, and then do as before,

But becauſe moſt men have not skill thus to divide and multiply; therefore they make uſe of tables and lines ſet upon rules to ſhew any breadth will make a foot; and ſo by their Compaſſes or Ruler, they try how many times the ſaid quantity is contained in the length of that Board, and reckon it to be ſo many foot long. This way is ancient, and is much uſed; and I no wayes find fault therewith: and the Tables hereof are ſo common, that I ſhall not need to ſet them down. Only for variety, and in conformity to ſome following concluſions, I ſhall preſent you with this new Table of Board-meaſure, which may be uſed as it ſtands in the Book, or drawn into a line, and ſet upon a Ruler.

A Table of Board Measure.

Breadth of the Board in Inches.	F. Parts. The quantity of one foot thereof in length.	Breadth of the Board in Inches.	F. Parts The quantity of one foot thereof in length.
1	0, 083	19	1, 583
2	0, 167	20	1, 667
3	0, 250	21	1, 750
4	0, 333	22	1, 833
5	0, 417	23	1, 917
6	0, 500	24	2, 000
7	0, 583	25	2, 083
8	0, 667	26	2, 167
9	0, 750	27	2, 250
10	0, 833	28	2, 333
11	0, 917	29	2, 417
12	1, 000	30	2, 500
13	1, 083	31	2, 583
14	1, 167	32	2, 667
15	1, 250	33	2, 750
16	1, 333	34	2, 833
17	1, 417	35	2, 917
18	1, 500	36	3, 000

This Table ſhews the proportion which one foot in the length, having any number of Inches in the breadth hath to one foot of board-meaſure wich ſhould contain 144 ſquare Inches, as aforeſaid.

It is thus made by this Rule,

As 12 Inches in breadth, and one foot in length,

Is to one foot of board-meaſure;

So any other number of Inches in breadth multiplied by one foot, or 12 Inches in length,

To the proportional part thereof to a foot.

For Example: If you would find the proportion which 1 foot length of 10 Inches broad, hath to a foot. Multiply this 10 Inches by 12, it makes 120. Then,

As 144 to 1 foot, ſo 120 to 0, 833.

That is ſomewhat above three quarters of a foot, being 833 thouſand parts of a foot.

But now for the uſe of this Table.

Having meaſured the breadth of your board, find it out in the Table, and take the number you find there, and multiply it by the feet which are contained in the length of the board; ſo cutting off the three laſt figures, you ſhall have the number of feet, and the figures cut off will ſhew the parts of a foot.

Thus

Thus in the former example, the Board being 10 inches broad, and 5 feet long.

The number for 10 Inches broad is 0,833
Which multiplied by 5 05

Makes, 4,165

That is, four feet, and two thirds of a quarter, as before.

If you think this too much labour, you may leave out the laſt Figure in the Table, and ſo work by 100 parts of a foot, but the other will be more exact.

And thus much for the uſual forms of Boards; as for any other forms of Pavements, Glaſs, or Wainſcot, you may ſee how they are to be meaſured in the following examples of Land, which I account the more uſeful and Gentile employment, and therefore ſhall ſpeak a little more largely of it.

How to meaſure any piece of Land.

FIrſt, in general, Land is meaſured by a Pole, Perch, or Rod, which is uſually 16 Feet, and an half long; yet in ſome places they uſe a Pole of 18 feet, eſpecially for Wood-Lands.

Now according to the Statute, 4 Poles in

in breadth, and 40 poles in length make an Acre. So that

One Acre contains	160	*ſquare Poles.*
Half an Acre contains	80	
A quarter, or 1 *Rood*	40	

Some uſe Chains of four or more Poles long, and divide them, as their fancy pleaſeth; I ſhall only ſhew you how to do it by Poles.

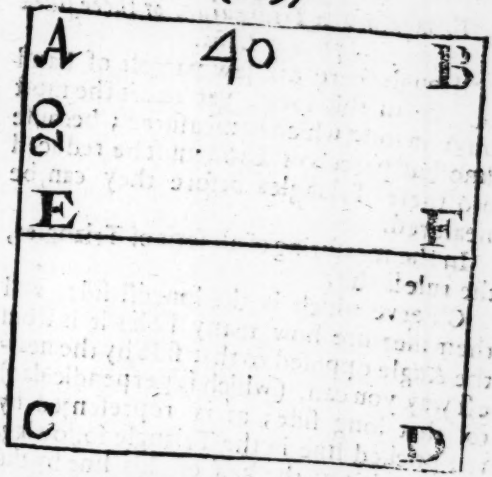
But now ſince every Field and parcel of Land hath almoſt a different form: I ſhall ſhew you firſt, how to meaſure ſome of the general and common forms; and then how to reduce others thereunto.

I. *How to meaſure a ſquare piece of Land.*

THis is one of the moſt common forms, and moſt eaſily to be underſtood. The meaſuring hereof, is as I ſhewed before, in the board. For whether it be a long ſquare, as that was, or that the ſides be every way equal, as this is, multiply one of the ſides by another of the ſides, next unto it, (not oppoſite to it) and the product ſhews the content in Poles; which divided by 160, will give the content in Acres.

Thus, let the ſquare *A B C D* repreſent a piece of Land, being 40 Poles ſquare each way. This 40 multiplied by 40, make 1600

and



and this divided by 160, yields 103. which shews the piece of Land is just 10 Acres.

But now if this square were longer one way then another; as suppose the upper half of it, *ABEF*, Here now *AB* is 40 Poles, but *AE* is but 20; these two multiplied, make 800; and this divided by 160, yields 5 Acres.

But here note that every four-sided piece of Land is not square, neither can thus be measured; therefore such four sided irregular figures may best be reduced into two Triangles, and so measured, as in the next.

II. To

II. *To meaſure a Triangular, or three ſided piece of Land.*

THough there are few parcels of Land lie in this form, yet this is the moſt common form which is meaſured; becauſe almoſt all parcels of Land muſt be reduced into theſe Triangles before they can be meaſured.

In the meaſuring of all ſorts of Triangles, the rule is this.

Obſerve which is the longeſt ſide, and then meaſure how many Poles it is from the Angle oppoſed to that ſide by the neareſt way you can, (which is perpendicular) to that long ſide; as is repreſented by the pricked line in the Triangle following. Then multiply the half of this line by the whole long line; or the half of the long line by the whole of this line, as you ſhall ſee moſt convenient, and ſo you ſhall have the content of the Triangle in poles, which you may reduce into Acres, as before.

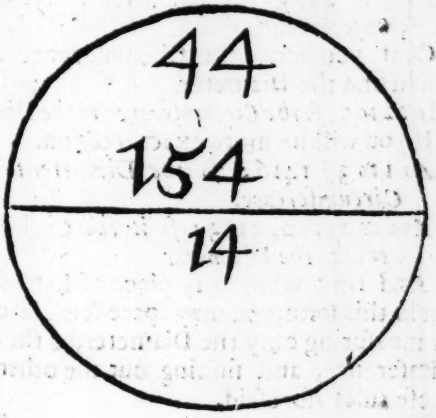
Thus

Thus, ſuppoſe the longeſt ſide of the Triangle to be 60 Poles; and the pricked, or perpendicular line 20 Poles; You may multiply either 60 by 10, or 20 by 30, the product is 600, which divided by 160, ſhews the content to be three Acres, and three Roods, or Quarters.

III. *To meaſure a Circular piece of Land.*

THe rule, for the meaſuring of a Circular piece of Land is this, Multiply half the Compaſs by half the Diameter.

Note, The Diameter is a line drawn croſs the midſt of the Circle.



H Thus

Thus the Diameter being 14 Poles, and the compaſs 44: the half of both theſe is 7 and 22, which multiplied together, yield 154 Poles, which lacks only ſix Poles of an Acre.

Now to this purpoſe it may be ſometimes neceſſary to know the proportion that there is between the Diameter, and the circumference of a Circle. I confeſs though the ordinary proportion of 7 to 22 is ſomewhat too much, yet it is but about 1 in 3000, which will breed no great difference in theſe operations.

So that if you know the Diameter and would find the circumference.

As 7 to 22, ſo the Diameter to the Circumference.

Or if you know the Circumference and would find the Diameter.

As 22 to 7, ſo the Circumference to the Diam.

If you will be more exact, reckon.

As 1 to 3, 1416: ſo the Diameter to the Circumference.

And as 1, to 0, 3183: ſo is the Circumference to the Diameter.

And thus when any piece of Land falls out in this form, you may ſpare ſome labour, by meaſuring only the Diameter, or the circumference, and finding out the other by theſe rules aforeſaid.

The

The half Circle, and quarter-Circle, or any other part of a Circle more or leſs, which hath one point or angle at the center of the circle, may be meaſured by the former rule, *viz.* half the compaſs, or arching ſide multiplied by the ſemidiameter, gives the content thereof.

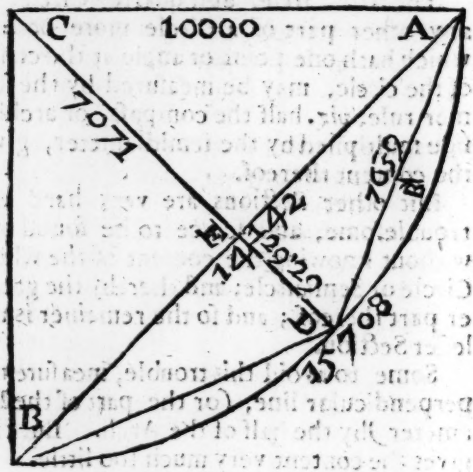
But other Sections are very hard and troubleſome, and ſcarce to be found out, without knowing the content of the whole Circle or Semicircle; and thereby the greater part thereof; and ſo the remainer is the leſſer Section.

Some to avoid this trouble, meaſure the perpendicular line, (or the part of the Diameter) by the half of the Arch. But this gives the content very much too little.

For Example.

Suppoſe in the Quadrant ADBC, the Radius or Semidiameter being 10000; and

the Arch ADB	15708	
Half this compaſs	7854	
Multiplied by the Radius;		10000
Yields for the content of the whole Quadrant		78540000



Again in the plain Triangle ABC,

The base AB *is*	14142
The half whereof is	7071
Which multiplyed by the Perpendicular EC	7071
Yields for the content thereof	49999041
Which should be	50000000

But

But the numbers 7071 being not perfect numbers, cause this small difference, which is not to be regarded.

Now the content of the whole quadrant being	78540000
And the content of the Triangle A B C, *a part thereof being substracted*	50000000
Remains for the Section ADBE	28540000

This being the true content of the said Section, if you try the other Rule by it, you shall find it much too little.

For the half of the arch ADB *is*	7854
Which multiplied by the Perpendicular DE	2929
Yields only	23004366
Whereas it should be	28540000

But you may save much of the former trouble, and will come more near the truth, if you take the Chord A B, and the perpendicular DE, and multiply the whole of the one by two thirds of the other. Thus,

The Chord A B *being*	14142
Multiplied by two thirds of 2929	1953
Yields	27619326

Which indeed should be	28540000
But yet it is much nearer than the number found the other way, viz.	23004396

And if the Chord be less, this way will be more exact. And therefore if you will be so curious; you may first find the content of the plain Triangle ADBE in this Section, and then the content of the two little Sections, AD and DB.

Thus the content of the plain Triangle ADBE *will be found to be*	20710959

And the content of the Section AD will thus be found.

The Chord AD *is*	7659
The Perpendicular	762
The two thirds thereof	508
By which multiplying the Chord,	7659
It yields	3890779

For the content of the Section AD.

Now the Section DE is like to the Section AD in every respect; therefore,

This

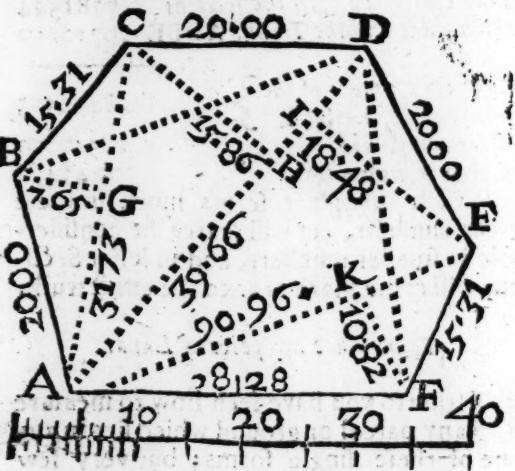
This number doubled	3890772
Is the content of both the ſections	7781544
which added to the Trian. ADBE	20710959
Makes the content of the whole Section ADBE	28492503
Whereas it ſhould	28540000
So that it wants only	00047497

Which though it ſeems much in theſe great numbers, yet will ſcarce be conſiderable in ſmaller numbers, and in leſſer Sections will come more near to the exact truth.

To meaſure any peice of Land.

HItherto you have ſeen how to meaſure any parcel or ground which lies in any one of theſe ſingle forms; but very few parcels of ground do ſo; and therefore before you can meaſure it, you muſt reduce it into ſome of theſe foreſaid figures. Now the moſt common and beſt form into which you may reduce any piece of ground, is to lay it out in ſeveral Triangles: and this you may do either in the field it ſelf, (if it be not very great) or elſe you muſt draw a plot of the field, and ſo draw ſeveral lines overthwart it; which may divide it into as few Triangles (taking in the whole) as poſſible may be: and then finding the contents of

These several Triangles, and add them altogether, and so you shall have the content of the whole field.



Thus in this figure which represents a piece of ground, having six unequal sides, you may reduce it into four Triangles, by drawing the three lines, *AC*, *AD*, *AE*, from the Angle at A.

Now to find the content of this field; first, in the Triangle *A B C*. you must measure the longest line thereof *A C*, which is 31 Poles, 73 hundred parts: then measure the perpendicular line *B G*, which is 7. Poles, 65 parts. Now multiply the one of these numbers by the half of the other, *viz*

31. 73.

31. 73. by 3. 82. and so you shall find the content of this Triangle to be 121 poles, 21 parts.

Secondly, in the Triangle, *A C D.*

	poles.	*parts.*
The length of the line A D. *is*	39	66
Length of the perpend. C H, *is*	15	86
So the content thereof is	314	50

Thirdly, in the Triangle, *ADE.*

	poles.	*parts*
The length of the line A D *is*	39	66
Length of the perpend. E I *is*	18	48
So the content thereof is	366	46

Fourthly in the Triangle, *AEF.*

	poles.	*parts.*
The length of the line AE *is*	36	96
Length of the Perpend F .K *is*	10	82
So the content thereof is	199	95

Now if you adde the content of these four Triangles all together, *viz.*

	poles	*parts.*
1 *The Triangle* ABC	121	21
2 *The Triangle* ACD	314	50
3 *The Triangle* ADE	366	46
4 *The Triangle* AEF	199	95
The Sum of them is	1002	12

Which is the content of the whole field; the which if you divide by 160, to bring it into acres, shews 6 acres, 1 rood, 2 poles, and 12 parts.

The

The moſt difficult task in this work is to find the true length of the Perpendiculars, eſpecially if you meaſure it in the field it ſelf, which muſt alwayes be taken very exactly.

To which purpoſe, there will be need of two perſons to help one another.

Thus, if you would find the length of the perpendicular *B G*, in the Triangle *A B C*. Let one party ſtand at the angle *A*, and let the other go from *A* toward *C*, as directly as he can. Now he that ſtands at the angle *A*, will plainly ſee whether the other ſwerveth to the right or left never ſo little, and muſt direct him; this muſt be his part in the work. The other man that walks from A towards B, muſt carefully obſerve when he comes juſt againſt the angle B, that it may be juſt upon his ſide, which will be when he is at G, from whence meaſuring up to B, he ſhall have the true length of the line G B.

But if you have a plot of the field in paper, then you need only take your Compaſſes, and ſetting one foot in B, open the other, ſo that it may touch the line A C in the neareſt place thereof, which is in G, then meaſure this diſtance upon your Scale of Poles, and ſo you ſhall have the length thereof.

By this you may perceive, that if you can draw

draw a true plot of the field in paper, it will be a great help to the measuring thereof. This may be easily done by many Instruments, and those which have skill to use them. Or if a man have but a Ruler with sights, and some convenient device to serve in stead of a stool or table in the field, that so he may lay a sheet of paper thereon, he may draw the foresaid lines to the several angles of the field; and so measuring the length of them, prick them down with his compasses; and drawing the boundary lines, he shall have the true plot of the field.

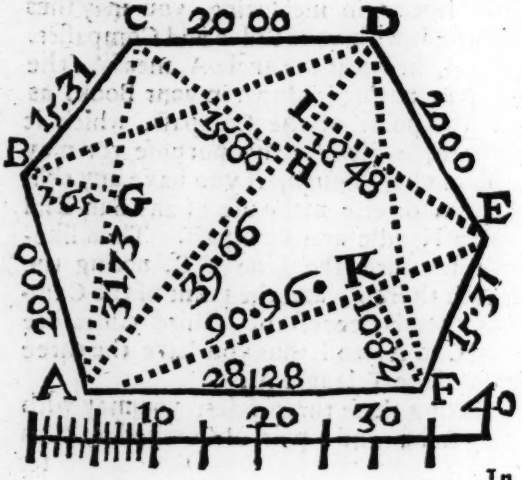
If this also be wanting, yet with a little more labour in measuring, you may thus perform it with your Ruler and Compasses.

First, being at the angle A, measure the side AB, noting it down in your Book, as also the point of the Compass, which it tends to, which for this purpose you may guess at near enough, if you have any skill therein, or else make use of any Sun-Dial with a Needle and Compass. Then likewise measure the Line BC, noting the length thereof, and the point of the Compass it tends neareſt to. Thirdly, measure from C to A, and thus you have the three sides of the Triangle ABC.

Having these three sides, you may with your Ruler and a pair of Compasses, thus

set

ſet out this Triangle in any paper. Firſt, drawing the line A C, and ſetting off the length thereof out of any Scale of equal parts, make two points at the end thereof at A and C. Then taking the length of the line A B out of the ſcale, ſet one foot of your Compaſſes in A. and with the other make a little arch at B. And then taking the length of the line B C out of the Scale, ſet one foot of your Compaſſes in C, and with the other croſs the foreſaid arch at B; ſo drawing the lines AB, and BC, you ſhall have the Triangle A B C truly drawn upon the paper.



In like manner, measuring the side C D, and the breadth of the field from A to D, and setting off the length of these two lines from the points A and C, as before; so you shall have the one half of the field truly drawn.

Then measuring the side D E, and the breadth A E, from the points A and D you may make the angle at E, and so set off another part of the field contained in the triangle A D E.

Lastly, measure the sides of the field E F, and A F, and therewith from the points A and E, make the angle at F.

Thus you have all the angles of the field, so that by drawing the lines from angle to angle, you have the true form thereof, and the lines which you measure cross the field, will be of great use in casting up the content thereof, being the bases of four Triangles; so that you have nothing to measure but the perpendiculars, which you may find out by your Scale, or now see how to measure them more exactly in the field it self.

The fittest Instrument used for this purpose is the plain Table; which, for a shift, you may imitate with any ruler with sights upon it, placing this Instrument at one corner of the field, as at A, you must turn the Ruler to the several angles B, C, D, E, F,

and

and draw the lines AB, AC, AD, AE, AF; then measure those distances, and setting off the length thereof by your Scale and Compasses; so you shall have the exact proportion of the field.

Or if you think this measuring too much labour, you may do thus, having taken the proportion of the angles at A, as before, you need measure only any one of the lines (but the most opposite to it is the best) as A D; then set up your Instrument at D, and set off the length off the line A D 39 Poles, 66 parts out of your Scale from A to D, make this D your Center-point, and so turning your Instrument, that the line D A may point directly to the angle at A, move your Ruler about to the other angles C B, FE, and draw the lines D C, D B, D F, DE, and where these lines cross the foresaid lines, there lies the true place and posture of these bounds of the field. And if you have a care to draw these lines exactly, you may by your Scale and Compasses measure the length of any of these lines, almost as exactly as in the field it self.

And thus also at two stations, you may draw the plot of any large piece of ground, or the platform of an whole Countrey, with the true distances of all the Towns and Villages therein, which you can see from both these places.

But

But many times it falls out, that in measuring great places, or Woods, or Hilly Grounds, you can see but few of these Angles at once. In this case, you must go round about the Wood or Field, measuring the sides thereof from angle to angle, & by your Instrument very diligently observing the quantity or proportion of these angles: So you shall have the true Symmetry of the field upon your paper, which you may divide into Triangles, and so find the true quantity thereof, as before.

But these things require a larger Discourse, I have only given you a taste; if you please, you may be better instructed by those who have written at large and expresly hereof, as Mr. Rathborn, *Mr.* Diggs, *and Mr.* Leybourn *in his* Compleat Surveyor.

Of the measuring of Solid Bodies.

IN the measuring of Timber, Stone, and such like solid Bodies, there must be respect had not only to the breadth and length, but also to the thickness thereof. And there are many common rules used in the

the measuring of these things, which deserve some corrections.

First, herein you must know, that a foot of timber is a foot square every way, *viz.* in length, breadth, and thickness: so that it is twelve times more than a foot of Board; a foot of Board being but 144 inches, but a foot of timber is 1728 Inches; and every Inch is square like a Die, and so is the foot also supposed to be; or if it want of this, either in breadth, or in thickness, it must have it in length: so that in what form soever it be, you must reckon thus:

1728 *square Inches make one foot.*
864 *square Inches make half a Foot.*
432 *square Inches make a quarter of a Foot.*

The most common shape which timber is brought into before it be measured, is a long Square, having equal sides; for trees growing, for the most part, round, by cutting off from each side alike, they come readily into this square.

Now to find the content of such a piece of squared Timber, you must multiply the Inches, of the breadth by the Inches of the thickness, and then multiply this product by the Inches of the length; so you shall have the whole solid content in Inches, which if you divide by 1728, the Inches in one

one foot; the quotient will ſhew you how many feet are in the piece of timber.

But this way, though very exact, may ſeem ſomewhat too tedious, and therefore men, who have daily uſe hereof, have tables and lines upon their Rulers; by which having meaſured the ſquare of the tree, they know how much in length will make a foot of timber; and ſo taking out this with their Compaſſes, they meaſure how many times that length is found in the length of the piece of timber; and ſo conclude it to be ſo many feet.

This way, as I ſhall not ſpeak againſt it, ſo it is ſo common, that I need not ſet down the tables thereof; but ſhall preſent you with this new Table, which you will find ſomewhat more ready and exact, eſpecially if you uſe your pen.

A Table shewing the true quantity of one foot length, of any true squared piece of Timber for Inches and half Inches.

Inches Square.	F.pts.		F.pts.		F.pts.
	0,002		1,085		4,166
1	0,007	13	1,174	25	4,340
	0,016		1,266		4,513
2	0,028	14	1,361	26	4,694
	0,043		1,460		4,877
3	0,062	15	1,562	27	5,063
	0,085		1,668		5,250
4	0,111	16	1,778	28	5,445
	0,140		1,891		5,670
5	0,174	17	2,007	29	5,840
	0,210		2,127		6,043
6	0,250	18	2,250	30	6,250
	0,293		2,377		6,460
7	0,340	19	2,507	31	6,673
	0,390		2,641		6,890
8	0,444	20	2,778	32	7,111
	0,502		2,918		7,333
9	0,562	21	3,062	33	7,562
	0,627		3,210		7,780
10	0,694	22	3,361	34	8,028
	0,765		3,516		8,263
11	0,840	23	3,673	35	8,507
	0,919		3,835		8,750
12	1,000	24	4,000	36	9,000

The

The Demonſtration of this Table

AS the common Tables of Timber-meaſure, ſhew how many inches and parts, make a foot of Timber, the Timber being any number of inches ſquare; ſo this ſhews you by the ſquare of the Timber-log in inches, how many feet, or 1000 parts of a foot are contained in one foot length thereof.

Now becauſe ſome may deſire to enlarge this Table, that ſo it may ſhew not only for the ſquares of inches and half inches, but the quarters, or tenth parts of Inches: (though theſe may be well enough known by the proportion between the Inches and half Inches) yet I ſhall ſhew you the ground-work of the Table, and ſo you may enlarge it at pleaſure.

A foot of Timber, you all know, ought to be 12 inches ſquare every way, *viz.* 12 inches in breadth, 12 inches in thickneſs, and 12 inches in length. Therefore this proportion will follow.

If the ſquare of 12 *Inches which is*		144
Require 1 *foot in length, which is parts*		1000
What ſhall any other Square, viz. the Square of 6 *?*	*which is*	36
The anſwer will be		0,250

The uſe the Table of Timber-meaſure.

HAving the true ſquare of any timber-log in Inches, and the length thereof in feet, to know the content thereof in feet:

Take the number anſwering to the ſquare of Inches out of the Table, and multiply it by the length in feet.

Thus, a piece of timber 18 Inches ſquare, and 25 foot long.

The number anſwering to 18 *Inches ſquare is*	2, 250
Which multiplied by 25 *the length*	25
	11 | 250
	45 | 00
Yields	56 | 250

Viz. 56 feet, and one quarter.

Here may ſeem ſome difficulty in finding the product of theſe mixt numbers, but you may ſee how to do it in pag. 47.

If

If you think this ſomewhat too tedious, you may leave out the laſt figures of the number, and work only by 100 parts of a foot.

Now for the more readineſs, and alſo for the more exactneſs, you may project this table of timber-meaſure into a line upon your Ruler, in ſuch a manner, that it ſhall ſerve better than the former Table.

But becauſe the foreſaid table falls out in odde parts, which will be very troubleſome to divide; therefore it will be worth the while, to find how many Inches and parts any certain number of the parts of this line will require, which you may thus find, and ſo inlarge the following table as you pleaſe.

Take the number 144 for 1000 parts, or 12 Inches, as before, and multiply it by the parts you deſire, and extract the ſquare Root out of the product: note, if it fall out in equal parts, add ſome ciphers to it, that ſo you may have the fraction in a thouſand parts at leaſt.

Thus for

Parts.	*Square.*	*Roots.*
0001	000144	0.379
0010	00144	1.200
0100	0144	3.795
1000	144	12.000

Having

Having thus made the Table, or making uſe of this already made, divide your ruler firſt into Inches, and then each inch into 10 or 100 parts, and out of the Table you ſhall readily ſet off the parts of the line of meaſure; which being done handſomely and truly, will ſhew you the quantity of Timber in one foot length of any number of Inches ſquare, to the tenth or 100 part of an inch; and to the 1000th. part of a foot; ſo that having the line, you will have no need of the former Table.

This you may ſee more plainly how to perform, by the Gauging line, which I have drawn after this ſort in its following place.

You may alſo draw the like line for Board meaſure, only by dividing each foot of your Ruler into 100, or 1000 parts.

A Table for the Division of the Line of Timber-Measure.

Parts of the Line of Timber-Measure.	In pts		In parts		In parts
1	0,397	400	7,589	2500	18,974
2	0,537	500	8,486	2600	19,349
3	0,657	600	9,295	2700	19,718
4	0,759	700	10,040	2800	20,080
5	0,849	800	10,734	2900	20,435
6	0,929	900	11,384	3000	20,785
7	1,004	1000	12,000	3500	22,450
8	1,073	1100	12,586	4000	24,000
9	1,138	1200	13,145	4500	25,456
10	1,200	1300	13,682	5000	26,833
20	1,697	1400	14,198	5500	28,143
30	2,078	1500	14,697	6000	29,393
40	2,400	1600	15,179	6500	30,594
50	2,683	1700	15,646	7000	31,748
60	2,939	1800	16,100	7500	32,863
70	3,175	1900	16,541	8000	33,941
80	3,394	2000	16,971	8500	34,986
90	4,000	2100	17,300	9000	35,000
100	4,795	2200	17,799	9500	36,986
200	5,367	2300	18,199	10000	37,948
300	6,573	2400	18,500		

Now

Now the uſe of this line being ſet upon your Ruler, will be very ready. For meaſuring the ſide of any ſquare piece of Timber, you need never look how many Inches ſquare it is, but the line it ſelf, counting from the right end thereof, will give you the number, which you muſt multiply by the length of the piece of Timber, meaſured in feet and hundred parts.

Thus, as before, if you find the ſide of a piece of Timber to reach to 2. 250. in this line, and the length thereof to be 25 foot, the content thereof is 56 feet and 250 parts, or a quarter of a foot.

To meaſure Timber, which is not ſquare exactly,

THough this be the common form of Timber, after the firſt hewing, yet many times by ſome accident, or by after-ſawing, there are many pieces of Timber thicker one way than another.

Now in this caſe it is uſual with ſome men to adde the broader and the narrower ſides together, and ſo to take the half thereof for the true ſquare.

But this muſt not alwayes be ſo ſlighted over, leſt you run into great errour. For though the errour will be little, when the difference between the ſides is not much;

much; yet the greater that difference is, the greater will be the errour.

For Example.

Let the ſides of the timber be 10 inches, and 12 inches; theſe two added together, make 22, the half whereof is 11; but yet this is not the true ſquare thereof: for 11 times 11 is 121; whereas 10 times 12 is 120, which is the true Area of the ſaid ſquare. Yet here the difference being but one inch in 120, may ſeem ſomewhat tolerable.

But now let the ſides of the Timber be 12 inches one way, and 6 the other way: theſe two added together make 18, and the half thereof is 9. Now the ſquare of 9 is 81, but the true ſquare of the timber is found by multiplying 12 by 6, ſo the Area is 72. Here you ſee the errour will be intolerable. And it is ſo much the more unconſcionable, becauſe it gives the buyer ſo much leſs than his due.

Mr. *Bedwel* hath framed a very ingenious Ruler for this purpoſe, if it be carefully made.

But the beſt way is to multiply the two ſides, and to find the true Area of the plain; and then by this Table, which you may alſo project into a line upon your Ruler, find out the proportion of a foot, and ſo multiply it by the length in feet as before.

A Table shewing the solid Content of one foot length, of any peice of Timber, according to the Area, or superficial Content, taken at the end thereof.

The Inches of the Area.	Feet	Parts.			Feet	Parts
1	0	007		200	1	389
2	0	014		300	2	083
3	0	021		400	2	778
4	0	028		500	3	472
5	0	035		600	4	167
6	0	042		700	4	861
7	0	049		800	5	556
8	0	056		900	6	250
9	0	062		1000	6	944
10	0	069		2000	13	888
20	0	139		3000	20	833
30	0	108		4000	27	778
40	0	278		5000	34	722
50	0	347		6000	41	666
60	0	417		7000	48	711
70	0	485		8000	55	555
80	0	556		9000	62	500
90	0	625		10000	69	444
100	0	694		20000	138	888

Like-

Likewiſe, if your Timber-log have any other than a ſquare form, whether it be regular or irregular, you muſt find the Area thereof, and ſo you ſhall have the quantity of one foot length thereof by this Table.

Thus the Area being		400 *Inches.*	
		foot	*parts*
The quantity of one foot by the Table is	}	2	778
This multiplyed by the length	30 *feet*		30
Shews the content			83, 340

To meaſure round Timber.

THe way commonly uſed is to gird theſe round pieces of timber about with a ſtring, and ſo doubling the ſtring, to take the fourth part thereof for true ſquare.

As for Example.

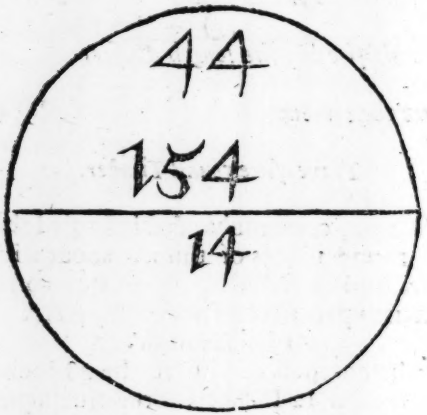
If the compaſs of the tree be 48 Inches, they reckon 12 Inches for the true ſquare thereof.

But this is very falſe, as you may ſee by this *little* Circle, caſting it up after the common way.

The Diameter of the Circle is 14 inches, the compaſs 44 inches. This is, according to that rule.

As 7 *to* 22.
So the Diameter to the Compaſs.

Then for the Content of this Circle, if you multiply half of the compaſs, which is 22, by half of the diameter which is 7; the true content will be 154 inches.



Whereas if you had taken a quarter of the compaſs, which is 11, for the ſquare root of the circle; this multiplied in it ſelf, would yield but 121 inches; which wants 33 inches of the true content: ſo there would be loſt above a fifth part thereof. And thus there

there will be in measuring any other round timber, by this rule; of what compass soever it be, somewhat above a fifth part thereof will be given away.

All that can be said in the defence of this custom is, that though most trees grow round, yet they must be hewed square, before they be fit timber for any use almost; and so this advantage in the measure may very well be allowed, for that which goes to waste in the chips, being good for nothing but the fire.

And in my mind, though Carpenters think not of this excuse, but take this rule for an absolute truth; yet this I suppose, was the first occasion of this rule, which may stand with some good reason. For if you consider the former circle, the compass being 44 Inches, the inscribed square will be scarce 10 inches, as appears by this proportion, which you may use for any other.

As 1 *to* 0, 225
So the Compass 44 *Inches.*
To the inscribed square 9 *inches.* 900 *parts.*

This is the greatest square which such a round piece of Timber can be hewn to, and this multiplied in it self, yields 98 inches, 010 parts for the Area thereof. Now if you adde these two Areas together, *viz.*

	Inches.
The Area of the inſcribed ſquare	98
And the full Area of the Circle	154
The ſum thereof will be	252
And the middle or mean thereof	126
And the content by this Rule was	121

To that this gives an indifferent allowance between the buyer and ſeller; it being thus meaſured, neither to the full extent, becauſe of the waſte: neither according to the exact ſquare thereof, becauſe that which is cut off, though it be not ſo good as the other, yet it may be good for ſomewhat.

But yet for all this, it is fit that the true content of the timber, let it be in what form ſoever, ſhould be exactly known, and th isis that which the meaſure ought to perform. As for the goodneſs of the Timber, and the waſt thereof, men muſt conſider that in the price of the Foot or Tun; and ſo I believe they do: and therefore being allowed for the waſte in the price thereof, there is no reaſon but they ſhould pay for the full meaſure which they have, and not have any allowance in that alſo.

But many deſire to buy Timber round, and will give as great a price for it as for ſquare Timber, becauſe of the allowance which they take to themſelves by their falſe meaſuring of it.

For,

For, firſt they compaſs the tree, and divide the line into three parts, caſting away one third part for the waſte of the bark and rinde: then the other two parts of the line they divide into four parts, and ſo take one quarter thereof for the true ſquare. Thus in the foreſaid tree, whoſe compaſs was 28 Inches, a third thereof, 16 inches allowed for waſte, there remains but 32, and then a quarter of this is but 8 Inches, whereas you ſee before, this tree will make a perfect ſquare of almoſt ten Inches, and all the other which is cut off will not be quite loſt, ſo that they will have at leaſt the one half of the timber by this way of allowance and falſe meaſure.

Therefore by the way you may take notice of the different value which there ought to be, between good clear timber perfectly ſquared, and that which is not.

The difference between the content of the circle, and the ſquare which may be wrought out of it, as you may ſee before, is above one third part.

But becauſe all this, ſpecially in great trees, need not go to chips and waſte; you may well in ſuch large round Timber, reckon a fifth part for waſte, and ſo the price of five feet thereof to be equal to four feet of ſquare Timber; and in leſſer pieces you

may reckon a quarter for the waſte, and ſo four feet thereof to be worth as much as three, and ſo let it be meaſured to the full content thereof.

Therefore now I ſhall, as briefly as I can, ſhew you the readieſt ways to find the true content of any round piece of timber.

And you may find this out either by the Diameter or by the Circumference.

If you work by the Diameter, the rule is this;

As 1 *to* 0,7854;
So the Square of the Diameter.
To the content of the Circle.

If you work by the compaſs of the circle, which I think will be beſt and moſt ready to be found, then take this rule:

As 1 *to* 0,0796.
So the ſquare of the circumference
To the content of the Circle.

And thus having found the content or Area of the circle, you may by the Table (page 145) find how many feet are in one foot length thereof.

Or you may work this ſomewhat ſhorter, thus.

As

As 1 *to* 0,00055262,
So the ſquare of the circumference
To the proportion of one foot in length thereof, to the meaſure in feet.

And according to this rule, I have framed this Table, to help thoſe that are not ſo ready in theſe operations, and ſo might fall into ſome miſtake. By which taking only the compaſs of the timber, they may known the quantity of the length of a foot thereof.

A Table, which by the Compass of any piece of round timber shews the true measure of one foot length thereof.

Inches of the Compass.

Co	F. pts.	Co	F. pts	Co	F. pts.
10	0.055	40	0.537	70	2.707
11	0.066	41	0.929	71	2.705
12	0.079	42	0.974	72	2.864
13	0.093	43	1.021	73	2.945
14	0.108	44	1.070	74	3.026
15	0.124	45	1.119	75	3.108
16	0.141	46	1.169	76	3.191
17	0.159	47	1.220	77	3.276
18	0.179	48	1.273	78	3.362
19	0.200	49	1.317	79	3.449
20	0.221	50	1.381	80	3.537
21	0.243	51	1.437	81	3.625
22	0.267	52	1.496	83	3.715
23	0.292	53	1.552	84	3.807
24	0.318	54	1.612	85	3.866
25	0.343	55	1.671	86	3.990
26	0.374	56	1.732	87	4.084
27	0.403	57	1.795	88	4.183
28	0.433	58	1.860	89	4.279
29	0.465	59	1.923	90	4.377
30	0.497	60	1.988	91	4.475
31	0.531	61	2.056	92	4.576
32	0.566	62	2.134	93	4.677
33	0.602	63	2.193	94	4.780
34	0.639	64	2.264	95	4.882
35	0.677	65	2.335	96	4.987
36	0.716	66	2.407	97	5.093
37	7.756	67	2.480	98	5.200
38	0.798	68	2.555	99	5.307
39	0.840	69	2.631	100	5.526

The uſe of the Table.

THe uſe of this Table is plain and ready; for having the compaſs of the Timber in inches, find it out in this Table, and ſo you ſhall there find the true quantity of one foot length thereof, which if you multiply by the number of feet which the Timber hath in length, it ſhews the true *content* thereof.

Thus a piece of Timber 48 inches in compaſs, and 20 foot long, is 25 feet, 460 parts.

For 48 *Inches in compaſs gives*	1, 273
Which multiplied by 20	20
Yields	25, 460

Which is 25 foot, and almoſt an half; whereas reckoning 12 inches, which is the quarter of the compaſs, to be the ſquare, it would yield but 20 feet, and ſo there would be five feet and almoſt an half loſt in this piece of Timber.

This Table may be alſo drawn into a line or two upon a Ruler, but I want time to ſhew how, therefore I ſhall leave it to the Artiſt himſelf, who ſhall have moſt occaſion for it.

A Table shewing how many Inches in length makes one foot of Timber, according to the compass of any round piece of Timber.

The Compass of the Tree in Inches.					
Co	In pts.	Co	In pts	Co	In pts.
10	217.15	40	13.572	70	4.432
11	179 46	41	12.916	71	4 308
12	150.80	42	12.310	72	4.198
13	128 49	43	11.744	73	4 075
14	110.79	44	11.211	74	3 965
15	94.312	45	10.723	75	3.861
16	84 822	46	10.262	76	3.760
17	75 137	47	9.830	77	3.663
18	67.020	48	9 425	78	3 569
19	60.151	49	9 044	79	3.179
20	94 286	50	8 686	80	3.393
21	49.223	51	8.349	81	3.310
22	44.865	52	8.030	82	3.230
23	40.904	53	7.730	83	3.152
24	37.690	54	7.447	84	3.078
25	34.743	55	7.178	85	3.006
26	32.122	56	6.924	86	2.936
27	29.787	57	6.684	87	2.869
28	27.697	58	6.455	88	2.804
29	25.820	59	6.238	89	2.742
30	24 127	60	6.030	90	2.681
31	22.596	61	5.536	91	2.622
32	21.206	62	5.649	92	2.566
33	19.936	63	5.471	93	2.511
34	18.784	64	5.301	94	2.458
35	17.736	65	5.140	95	2 406
36	16.755	66	4.985	96	2.356
37	15.862	67	4.837	97	2.307
38	15.038	68	4.696	98	2.261
39	14.276	69	4.561	99	2.216
				100	2.171

Having received information, that the meaſuring of round Timber is of much concernment; to make the former Rules more plain, I have added this Table, agreeable to the ordinary wayes and rules of meaſuring Timber, which ſhews by the compaſs of any tree or round timber-log; how many Inches and parts thereof make one foot of Timber, the uſe whereof is thus.

Take the compaſs of the tree, and ſo find how many inches it is about; look this compaſs in the Table, and by it you ſhall ſee how many inches make a foot of Timber; then with a Ruler, or a pair of Compaſſes, meaſure how many times you find that length in the piece of Timber, and ſo many feet there is of it. Thus the compaſs of a tree being 60 Inches, you ſhall find in the Table 6 inches, and 030 parts, that is a very little more than 6 inches in length, make a foot of timber: ſo that if the tree be 12 foot long, there is very near 24 foot of timber in it: for 12 foot and 1 inch is ſomewhat above 24 feet. This being the common way of meaſuring, I hope needs the leſs explaining; only becauſe moſt trees are tapering, you muſt allow for that as in the next Chapter.

If any tree exceed the compaſs of 100 inches,

inches, take half the compaſs, and find the number in the Table belonging thereto, and divide it by 4, or take a fourth part of it, and that makes a foot of Timber. Thus, ſuppoſe a tree be 146 inches about; the half of this is 73, and againſt this in the Table, I find 4 inches, 075 parts, one quarter whereof, *viz.* 1 inch, 019 parts makes one foot of timber.

To meaſure Tapering Timber.

TApering Timber (according as the baſe thereof is either round, or right lined) is either a Cone or a Pyramid, or a ſegment of one of theſe.

If it be a compleat Cone or Pyramid having but one baſe, and ending in a ſharp point, then you muſt, multiply the Area of the baſe by a third part of the height.

Thus, ſuppoſe the four-ſquare Pyramid ABC to be 45 foot long, and 18 inches ſquare at the baſe. You ſhall find by the Table of Timber-meaſure (pag. 136) that 18 inches ſquare yield for the content of one foot length 2 feet, 250 parts: this multiplied by 15 feet, which is one third of the length thereof, makes 33 feet, 750 parts.

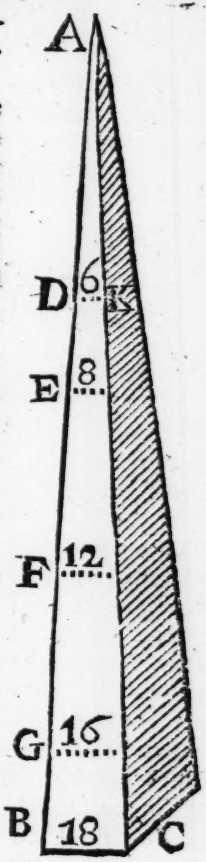
Thus

Thus the whole Pyramid is eaſily meaſured.

But now ſuppoſe there were onely a part thereof to be meaſured, *viz.* D K B C, being 30 foot long from D to B, being ſix inches ſquare at D, and 18 inches ſquare at B, as before.

The common way uſed herein, is to find out the ſquare in the very middeſt thereof, and to work by that, as if it were the true ſquare, but this way, though it be true in flat, as boards or land, yet here it yields alwayes ſomewhat leſſe.

For, according to this rule, the ſquare in midſt at F is 12 inches, and ſo the piece of Timber ſhould be 30 foot long. But this is not the truth,



For

For proof hereof, these two parts of the Pyramid AD and DB must, as you saw before, make up 33 feet, 750 parts.

But the top of the Pyramid AD, measured by the true rule, makes but 1 foot, 250 parts. For the base thereof DK being six Inches square.

The solid content of one foot is	0.250
Which multiplied by a third of the length 5 feet	5.000
Yields	1.250

Now this 1 foot, 250 parts added to the 30 feet, which was thought to be the measure of the lower part D B, makes but 31 feet, 250 parts, whereas you see it should be 33 feet 250 parts. So that here is lost 2 feet, and an half of Timber by this way of measuring.

And this way of *Ramus*, to measure both the parts of the Pyramis, and then to substract one from the other, seems to me more plain and easie than that prescribed by Mr. *Oughtred*, and Mr. *Wingate*, for the measuring of such tapering-timber. But you may say, How shall we find the length of that part of the Pyramis which is wanting?

I anſwer, Obſerve the difference between the two ends, which in this example is 12 inches, and this proportion will hold well enough in ſuch kind of Pyramids.

As the difference of the two ends	12 *inches.*
To the length between them	30 *feet.*
So the greater baſe	18 *inches.*
To the whole length	45 *feet.*
And thus the whole Pyramis being found, as before, to be	33 *feet* 750 *parts*
And the top thereof to be ſubſtracted	1 *foot*, 250 *parts*
There remains for the other part	32 *feet*, 500 *parts*

And this is the true quantity of the ſaid tapering piece of Timber.

If this way ſeem too troubleſome to the common ſort of meaſurers, they may then meaſure ſuch pieces of Timber, as if they were two or three ſeveral pieces; and thus meaſuring in the midſt of every ten feet-length; they will find the work very eaſie by theſe Tables, and much more exact than their common way at once meaſuring.

Thus, this piece of Timber being 30 foot long,

The ſquare thereof at G, which is in the midſt of the firſt 10 feet, is 16 inches, to which

which there anſwers in the Table of Timber-meaſure 1778; which multiplied by 10, by adding a cipher, and ſetting the (.) a figure forwarder, makes

	F. parts.
	17. 780
The like at F, *for the next* 10 *feet, being* 12 *inches ſquare*	*is* 10. 000
The like at E, *for the laſt* 10 *feet, being* 8 *inches ſquare*	4. 440
The ſum of all three is	32. 220
Which lacks only	00. 280
Of the true content	32. 500

As I have ſhewed you how to do with this ſquare tapering-timber, ſo you may do by the round tapering-timber, working by the table of round timber (p,129) Alſo you may ſee how to meaſure any other many-ſided Pyramis. But I have been already too long in theſe things: only the uſefulneſs hereof (all timber being almoſt of this faſhion) and the errors of many herein, and the little which hath been written hereof by others hath made me the more large.

Note, if any of the numbers of theſe tables be too little for your occaſion, you may work by the half thereof.

Thus

Thus, ſuppoſe a piece of Timber or Stone to be 48 inches ſquare. This Table, p. 134, reacheth but to 36 inches ſquare; therefore take the half of your number, which will be 24; and this in the Table gives you 2 feet 000 parts; and this is the quantity of one quarter of a foot length thereof, ſo that if you multiply it by 4, it makes 16 feet, which is the content of one foot length of the piece of timber: and ſo work, as before.

Of Gauging.

THere is not much difference (in the thing it ſelf) from meaſuring of other ſolids; only they are meaſured by feet and inches; theſe by gallons, quarts, and pints, or the parts thereof.

There are two things herein chiefly neceſſary, yet both much controverted.

Firſt, theſe Veſſels being all of irregular forms, how to reduce them to a regular proportion.

Secondly, to find the true quantity of the Gallon in cubick inches or parts of a foot.

For

For the first of these, the best way is this, according to Mr. *Oughtred.*

Measure the Diameter of the vessel both at the bung, and at the head thereof; and by the Diameters find out the Area of the circles. Then take two thirds of the Area of the Circle at the bung, and one third of the Area of the Circle of the head, and adde them together: and lastly, multiply the sum thereof by the length of the vessel.

For the second thing, the content of our English Gallon, which is the measure of all these Vessels. This is most commonly received, that a Wine Gallon contains 231 cubick inches: yet Dr. *Wybard* pleads very strongly, that it is somewhat less, making the Wine-Gallon to be 224 inches, or 225 at most. But the difference being so small, the errour will not be much; and therefore till the exact truth be more certainly known, I shall, with the most, follow the first, counting it better to allow rather a little overmeasure than any thing under.

Thus for example, suppose a vessel, whose Diameter at the Bung is 32 inches, and at the head 18 Inches, and the length 40 Inches.

Two thirds of the Circle at the bung are	536, 166
One third of the circle at the heads is	84,823
The ſumme of theſe 2	620,789
which multiplied by the length 40 inches	40
The ſumme is	24839,560

This is the ſolid content of the veſſel.

Now there being 231 cubick Inches in a wine Gallon, if you divide this 24839,560 by 231, you ſhall find 107, 530.

So that there are 107 Gallons, and 530 parts, which is a little above half a Gallon in the ſaid veſſel.

According to theſe rules and obſervations I have calculated this Table, without which it would be very troubleſome to find this out at length, *viz.* firſt the Area of the Circles, and then the content of the Veſſel in cubick inches; and laſtly, to reduce this into Gallons; therefore this Table ſhews you one third, and two thirds of the Area of any Circle, ready caſt up in the parts of a Gallon, for any Diameter to 60 inches, whereby ſo much of the labour will be ſaved.

If you deſire a more particular account of the manner of calculating this Table; it is grounded upon theſe Theorems.

Firſt,

First, *as* 1 *to* 0, 7854
So the ſquare of the Diameter; 1 *inch*
To the content of the Circle. 07854
Secondly, *As* 231, *the ſquare inches in one Wine-Gallon,*
To 1 *gallon or parts* 1, 0000
So the content of the Circle, 0, 7854
To the parts of a gallon, 0, 0034

So that the Area of a Circle having one inch for its Diameter, is the 0, 0034 part of a gallon.

Now a third part of this number is 0,001133. This number therefore 1133 being multiplied by the ſquare of any Circles Diameter taken by inch-meaſure, gives the third part of the content thereof in Wine-meaſure, which are the parts to be taken of the Circle at the head of the Caſk. And this ſame number doubled is two thirds of the like circle, being the parts to be taken at the bung of the Caſk. Thus much for the making of the Table; which you may increaſe as you pleaſe to any parts of an inch.

A Table for the Gauging of Wine-Vessels.

Inches of the Diameter. D	Head G.pts	Bung G pts	D.	Head G.pts	Bung G.pts.
01	0.001	0.002	31	1.089	2.178
02	0.004	0.009	32	1.160	2.321
03	0.010	0.020	33	1.234	2 468
04	0.018	0.036	34	1.310	2 620
05	0.028	0.056	35	1.388	2 776
06	0.041	0.081	36	1.469	2 938
07	0.056	0.111	37	1.551	3 102
08	0.072	0.145	38	1.636	3 272
09	0.092	0.183	39	1.724	3 448
10	0.113	0.226	40	1.813	3.625
11	0.137	0 274	41	1.904	3 809
12	0.163	0.326	42	2.000	4 000
13	0.192	0.383	43	2.096	4 191
14	0.221	0 444	44	2.194	4 388
15	0.255	0.510	45	2.295	4.588
16	0.290	0 580	46	2.398	4 796
17	0.328	0 557	47	2.504	5.007
18	0.367	0.734	48	2.611	5 222
19	0.409	0.818	49	2.721	5 442
20	0.453	0.906	50	2.833	5 665
21	0.500	1.000	51	2.948	5 895
22	0.548	1.097	52	3.065	6.129
23	0.600	1.199	53	3.184	6 367
24	0.653	1.305	54	3.305	6 609
25	0.708	1.416	55	3.428	6.856
26	0.766	1.532	56	3.554	7.108
27	0.826	1.692	57	3.682	7 364
28	0.888	1.777	58	3.813	7.625
29	0.953	1.906	59	3 945	7.890
30	1.020	2.040	60	4 080	8 160

The use of this Table is thus.

First, measure the Diameter at the Head, and find the number in the Table belonging to it. Then measure the Diameter of the bung, and find the number belonging to that. Then adde these two together, and multiply the sum thereof by the Inches of the vessels length, measured in the inside of the vessel from head to head.

Thus, according to Mr. *Oughtreds* example, in the Circles of proportion: Suppose a Vessel having the Diameter at the Head 18 Inches, the Diameter at the Bung 32 Inches, and the length thereof 40 inches, the content thereof is thus found.

The Table shews	*G. parts*
For 18 *inches at the Head*	0,367
For 32 *Inches at the Bung,*	2,321
These two added together, make	2,688
Which multiplied by the length being 40 *inches*	40
Makes	107,520

According to his operation it should be 107 gallons, 530 parts, which difference is of no moment in these conclusions.

Of

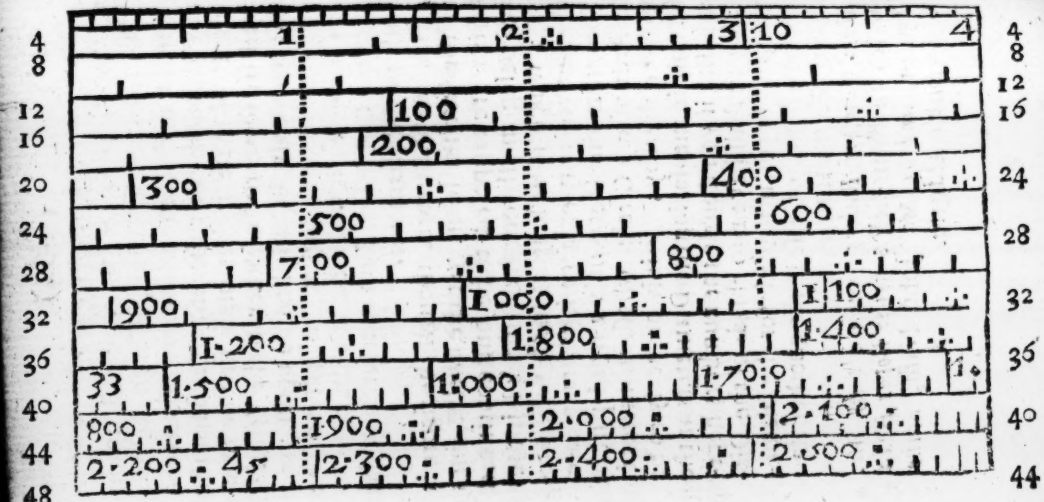
Of the Gauging line.

NOw becauſe this Table is caſt up only to whole Inches, though the proportional difference for any part of an inch may be found eaſily thereby: yet ſince the number of theſe inches muſt firſt be meaſured by ſome rod or other in the Veſſel it ſelf; you may ſet this line ſo upon your rod, that without having reſpect to the inch meaſure, it will ſhew you the true Area of the Circle in Gallon-meaſure, by the depth of the Diameter.

This line therefore, though the figure is but four inches long, yet the twelve lines therein are ſuppoſed to be one continued line, being in all four feet, or 48 inches long; which is as long as moſt veſſels require; but you may enlarge it as you pleaſe.

Note, this line ſhews only a third part of the Area of any Circle, whoſe Diameter is meaſured thereby; ſo it is properly to be uſed only in meaſuring the Diameters at the heads. But if you double the numbers hereof; ſo you ſhall have two thirds of the Diameter, and ſo you may uſe it for the Diameters at the bung, or elſe make another line on purpoſe for them.

Theſe Gauging Rulers are made by Mr. Hayes *in* Moor-fields *by the Popes Head Tavern, and by Mr.* John Nath, *at the Globe within* Aldgate.


1
2
3
10
4
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
45

Now the use of this line is the same with the Table, and is to be only instead of a larger Table, shewing the parts of a Gallon belonging to each inch. As you may see by the former example.

The Gauging line shews	*G. parts*
For 18 inches at the head	0,367
For 32 inches, which must be doubled, because at the bung.	1,160,5
	1,160,5
Yields as before,	2,688,0
And multiplied by the length	40
Yields, as before,	107,520

And thus working by this line, you may readily find these numbers to the 1000 part of a Gallon, for each 1000 part of an inch, which is as exact I think as need be.

And thus this troublesome business is very easily performed, without any Equation of Diameters, or Reduction of Measures; which with some confidence I dare present to the candid censure of the better learned, and to the practice of such as have use thereof.

How to make this Gauging-line, and to set it upon a Gauging-Rod.

BUt though this operation by this line is performed easily, yet the making

of this line, will at the first be some trouble, unless you know how to find out some certain equal numbers thereof, *viz.* every 5 or 10 parts; otherwise, you will never divide the line either readily or handsomely by the former Table.

Now to find these parts, you may remember that 11333, or more exactly, the third part of 34 was the number by which the Table was framed, So that

As 34 *to* 3, *so* 1 *to* 882358941.

This number, or six of the first figures thereof, you must multiply by the parts you desire, and then extract the square-root (as before in the line of Timber-measure) so you may find any part of this line as in this Table, and draw this Gauging-line very exactly thereby, having an inch-line upon your Rule, divided into decimal parts.

Parts	*Squares.*	*Roots,*	*Inch. parts.*
1	882352	939	0.939
10	8823529	2975	2.975
100	88235294	9393	9.393
1000	882352941	29704	29.704

A Table to divide the Gauging-line for Wine-measure.

Parts of the Gauging-line 1000 parts in one Gallon.

line	*In parts*	*line*	*In parts*	*line*	*In parts*
1	0.910	160	11.882	400	18.782
2	1.328	170	12.247	410	19.020
3	1.627	180	12.602	420	19.250
4	1.879	190	12.948	430	19.478
5	2.100	200	13.284	440	19.703
6	2.301	210	13.612	450	19.926
7	2.485	220	13.933	460	20.146
8	2.657	230	14.246	470	20.365
9	2.818	240	14.552	480	20.580
10	2.970	250	14.852	490	20.793
20	4.201	260	15.146	500	21.004
30	5.145	270	15.435	510	21.214
40	5.941	280	15.718	520	21.420
50	6.642	290	15.997	530	21.625
60	7.276	300	16.270	540	21.826
70	7.859	310	16.539	550	22.028
80	8.401	320	16.803	560	22.228
90	8.911	330	17.064	570	22.427
100	9.393	340	17.320	580	22.621
110	9.852	350	17.573	590	22.815
120	10.287	360	17.823	600	23.008
130	10.710	370	18.069	610	23.200
140	11.114	380	18.311	620	23.390
150	11.504	390	18.550	630	23.575

A Table to divide the Gauging-line for Wine-measure.

line	In parts	line	In parts	line	In parts
640	22.763	880	27.865	2200	44.058
650	23.948	890	28.022	2300	45.049
660	24.132	900	28.180	2400	46.019
670	24.325	910	28.336	2500	46.966
680	24.495	920	28.491	2600	47.898
690	24.674	930	28.646	2700	48.809
700	24.852	940	28.800	2800	49.705
710	25.029	950	28.954	2900	50.585
720	25.201	960	29.105	3000	51.449
730	25.382	970	29.254	3100	52.300
740	25.553	980	29.407	3200	53.137
750	25.725	990	29.555	3300	53.961
760	25.895	1000	29.704	3400	54.777
770	26.066	1100	31.153	3500	55.572
780	26.234	1200	32.530	3600	56.362
790	26.401	1300	33.867	3700	57.137
800	26.569	1400	35.148	3800	57.905
810	26.734	1500	36.380	3900	58.662
820	26.898	1600	37.575	4000	59.409
830	27.062	1700	38.730		
840	27.225	1800	39.853		
850	27.383	1900	40.945		
860	27.548	2000	42.008		
870	27.704	2100	43.045		

Yet becauſe theſe Gauging lines are not ſo ready to be had, and many have Gauging lines already, which are divided into inches. by which you may exactly meaſure the Diameters at the head and bung of the veſſel; I have encreaſed the former Table, to ſhew the third part of the Area of any Circle in Gallon-meaſure, to every tenth part of an inch, which will ſerve for the Diameters at the head; and then for the Diameters at the bung, you muſt double the numbers in this Table, and ſo work as before.

The Table is ſo plain it needs no explaining, only take notice that you muſt find the whole inches in the ſides of the Table, and the parts of inches at the head of the Table, and in the ſquare-meeting of theſe two, you ſhall find the gallons and parts which you muſt uſe, as before in the other Table.

A Table of Gauging for Wine-Vessels.

Parts of an Inch.

Inches.		1	2	3	4
	Gpts	Gpts	Gpts	Gpts	Gpts
1	0.001	0.001	0.002	0.002	0.002
2	0.004	0.005	0.006	0.006	0.007
3	0.010	0.011	0.012	0.012	0.013
4	0.018	0.019	0.020	0.021	0.022
5	0.028	0.029	0.030	0.032	0.033
6	0.041	0.042	0.044	0.045	0.046
7	0.056	0.057	0.059	0.060	0.062
8	0.072	0.074	0.076	0.078	0.080
9	0.092	0.094	0.096	0.098	0.100
10	0.113	0.116	0.118	0.120	0.122
11	0.137	0.140	0.141	0.145	0.147
12	0.163	0.166	0.169	0.171	0.174
13	0.192	0.195	0.197	0.200	0.203
14	0.222	0.225	0.229	0.232	0.253
15	0.255	0.258	0.262	0.265	0.269
16	0.290	0.294	0.297	0.301	0.305
17	0.328	0.331	0.335	0.339	0.343
18	0.367	0.371	0.375	0.379	0.384
19	0.409	0.413	0.418	0.422	0.426
20	0.453	0.458	0.462	0.467	0.472
21	0.500	0.505	0.509	0.514	0.519
22	0.549	0.554	0.559	0.564	0.569
23	0.600	0.605	0.610	0.615	0.620
24	0.653	0.658	0.664	0.669	0.675
25	0.708	0.714	0.720	0.725	0.731
26	0.766	0.772	0.778	0.784	0.790
27	0.826	0.832	0.838	0.845	0.851
28	0.888	0.895	0.901	0.908	0.914
29	0.953	0.960	0.966	0.973	0.980
30	1.020	1.027	1.034	1.041	1.074

A Table for Gauging of Wine Vessels.

Parts of an Inch.

Inches	5	6	7	8	9
	G.pts	G.pts	G.pts	G.pts	G.pts
1	0.003	0.003	0.003	0.004	0.004
2	0.007	0.008	0.008	0.009	0.009
3	0.014	0.015	0.016	0.016	0.017
4	0.023	0.024	0.025	0.026	0.027
5	0.034	0.036	0.037	0.038	0.039
6	0.048	0.049	0.051	0.052	0.054
7	0.064	0.065	0.067	0.069	0.071
8	0.082	0.084	0.086	0.088	0.090
9	0.102	0.104	0.107	0.109	0.111
10	0.125	0.127	0.130	0.132	0.135
11	0.150	0.152	0.155	0.158	0.160
12	0.177	0.180	0.183	0.186	0.189
13	0.207	0.210	0.213	0.216	0.219
14	0.238	0.242	0.245	0.248	0.252
15	0.272	0.276	0.279	0.283	0.287
16	0.308	0.312	0.316	0.320	0.324
17	0.347	0.351	0.355	0.359	0.363
18	0.388	0.392	0.396	0.400	0.405
19	0.431	0.435	0.440	0.444	0.449
20	0.476	0.481	0.486	0.490	0.495
21	0.524	0.529	0.534	0.539	0.544
22	0.574	0.579	0.584	0.589	0.594
23	0.626	0.631	0.636	0.642	0.647
24	0.68	0.686	0.691	0.697	0.703
25	0.737	0.743	0.749	0.754	0.760
26	0.796	0.802	0.808	0.814	0.820
27	0.857	0.863	0.870	0.876	0.882
28	0.920	0.927	0.934	0.940	0.947
29	0.986	0.993	1.000	1.006	1.013
30	1.054	1.061	1.068	1.075	1.082

A Table of Gauging for Wine-Vessels.

Parts of Inches.

Inches.	0	1	2	3	4
	Gpts	Gpts	Gpts	Gpts	Gpts
31	1.089	1.096	1.103	1.110	1.117
32	1.160	1.168	1.175	1.182	1.190
33	1.234	1.242	1.249	1.257	1.264
34	1.310	1.318	1.325	1.233	1.341
35	1.388	1.396	1.404	1.412	1.420
36	1 469	1.477	1.485	1.493	1.501
37	1.551	1.560	1.568	1.577	1.585
38	1.636	1.645	1.654	1.662	1.671
39	1.724	1.733	1.741	1.750	1.759
40	1.813	1.822	1.831	1.841	1.850
41	1.905	1.914	1.924	1.933	1.942
42	2.000	2.009	2.018	2.028	2.037
43	2 096	2.105	2.115	2.125	2.135
44	2.194	2.204	2.214	2.224	2.234
45	2.295	2.305	2.316	2.326	2.336
46	2.398	2 408	2.419	2.429	2.440
47	2.504	2.514	2.525	2.536	2.547
48	2.611	2.622	2.633	2.644	2.655
49	2.721	2.732	2.744	2.755	2.766
50	2.833	2.845	2.856	2.868	2.879
51	2.948	2.959	2.971	2.983	2.994
52	3.065	3.076	3.088	3.100	3.112
53	3.284	3.296	3.208	3.220	3.232
54	3.305	3.317	3.330	3.342	3.354
55	3.428	3.441	3.453	3.466	3.479
56	3.554	3.567	3.580	3.593	3.605
57	3.682	3.695	3.708	3.721	3.734
58	3.813	3.826	3.839	3.852	3.869
59	3.945	3.959	3.972	3.986	3.999
60	4.080	4.094	4.107	2.121	4.135

A Table for Gauging of Wine Veſſels.

Parts of Inches.

Inches	5 G.pts	6 G.pts	7 G.pts	8 G.pts	9 G.pts
31	1.125	1.132	1.139	1.146	1.153
32	1.197	1.204	1.212	1.219	1.227
33	1.272	1.279	1.287	1.295	1.302
34	1.349	1.357	1.365	1.373	1.380
35	1.428	1.436	1.444	1.452	1.461
36	1.510	1.518	1.526	1.535	1.543
37	1.594	1.602	1.619	1.619	1.628
38	1.680	1.689	1.697	1.706	1.715
39	1.768	1.777	1.786	1.795	1.802
40	1.859	1.868	1.877	1.886	1.896
41	1.952	1.961	1.971	1.980	1.990
42	2.047	2.057	2.066	2.076	2.086
43	2.145	2.154	2.164	2.174	2.184
44	2.244	2.254	2.264	2.275	2.285
45	2.346	2.356	2.367	2.377	2.388
46	2.450	2.461	2.472	2.482	2.493
47	2.557	2.568	2.579	2.589	2.600
48	2.666	2.677	2.688	2.699	2.710
49	2.777	2.788	2.800	2.811	2.822
50	2.890	2.902	2.913	2.925	2.936
51	3.006	3.018	3.030	3.041	3.053
52	3.124	3.136	3.148	3.160	3.172
53	3.244	3.256	3.268	3.281	3.293
54	3.367	3.379	3.391	3.404	3.416
55	3.491	3.504	3.516	3.529	3.432
56	3.618	3.631	3.644	3.657	3.669
57	3.747	3.760	3.773	3.786	3.800
58	3.879	3.892	3.905	3.919	3.932
59	4.013	4.026	4.000	4.153	4.067
60	4.149	4.162	4.176	4.190	4.203

Of

Of the measuring of Ale or Beer-Vessels.

TO measure Ale or Beer-Vessels, your best way will be to make the like Tables and line as for Wine-measure; and so the practice will be all one.

But first you must know the true content of the Ale-Gallon, concerning which there are divers reports and accounts. Some ancient Artist, *viz.* Mr. *Goodwin*, and Mr. *Reynolds* affirm, that the porportion between the Ale-Gallon and Wine-Gallon is as 4 to 5; the Wine-Gallon being 231 Inches, and the Ale-Gallon $286\frac{3}{4}$. This, by Mr. *Oughtred* is much lessened, being supposed by him to be but 272 inches, and $\frac{1}{2}$ and Dr. *Wybard* lessens it somewhat more, making it at the most but 273 inches. But so far as I can learn, there are three sorts of measures in use. The measure for Wine being 231 inches; the measure for dry things, as Corn, *&c.* being about 272; and the measure for Beer and Ale being 288 inches and $\frac{3}{4}$.

The

The proportion between these three gallons is 28, 33, 35; but having little to do with the middle Gallon, I shall take the Ale-Gallon to be 288 inches and three quarters, and conclude the porportion between the Wine and Ale-Gallon to be exactly as 4 to 5.

Now therefore if you have much occasion to gauge Beer-Vessels for your ready use, you may thus make the like Tables and line as you did for the Wine-measure.

As 288 *inches three quarters, the inches in one Ale-Gallon.*

To the part of a Gallon	1,00000
So the content of the Circle, having one inch Diameter	07854
To the like parts of a Gallon.	00272

Now a 3d part of this being 90 & 2 thirds or 90, 666 multiplied by the square of the Diameter of any Circle taken in inch-measure, gives a third part of the content thereof, which is the measure to be used for the head of the Vessel; and this doubled, shews the number to be used for two thirds of the Diameter at the Bung, and thus you may make a Table for Beer-measure to as many inches and parts of inches as you please.

As

As you may see in this following Table of Beer-measure; which you must use as before for Wine-measure.

For Example, the *London* Coopers scantlings for a Beer-Barrel is thus.

The Diameter at the head 19 *inches*, 9 *parts*
The Diameter at the Bung, 23 *Inches*, 0 *parts*
The length is 27 *inches*, 4 *parts*

Now to find out the content of this vessel by this Table.

	G. parts
The Table will shew	
For the 19 *Inches* 9 *parts at the head*	00,359
For the 23 *Inches at the bung*	00,480
Which must be doubled or repeated	00,480
The Sum	01,319
This multiplied by the length	27, 4
	36, 140

Yields 36 Gallons, and 140 parts over, which is a little above a pint. By which it appears that the Beer-Barrel agrees well enough with this rule, and may be a confirmation of the truth of the foresaid proportion between the Wine-Gallon and the Beer-Gallon, *viz.* as 4 to five.

The

The like you ſhall find in the ſcantling for the Kilderkin.

			G. parts.
Diam. at head	16 *Inches*	1 *part,*	00,235
at Bung	18	6	00,314
The ſame again			00,314
The Sum			00,863
Multiplied by length 21 *In.* 1 *pt.*			21 1

Yields 18 Gallons, and 209 parts over, being about a pint and an half too much.

Thus you ſee theſe Rules agree very well with the Coopers and Brewers, who are moſt concerned therein, and would not willingly allow ſo much over-meaſure, as the other rules intimate, but would rather, if they had any truth, be ready to follow them for their own advantage.

A Table for the Gauging

Parts of an Inch.

Inches.	0	1	2	3	4
	G.prts	G.prts	G.prts	G.prts	G.prts
1	0.001	0.001	0.002	0.002	0.002
2	0.004	0.004	0.004	0.005	0.005
3	0.008	0.009	0.009	0.010	0 010
4	0.014	0.045	0.016	0.017	0.017
5	0.023	0.024	0.024	0.025	0.026
6	0.033	0.034	0.035	0.036	0.037
7	0.044	0.046	0.047	0.048	0.550
8	0.058	0.059	0.064	0.062	0.064
9	0.073	0.075	0.077	0.078	0.080
10	0.091	0.092	0.094	0.096	0.098
11	0.110	0.112	0.114	0.116	0.118
12	0.130	0.133	0.135	0.137	0.139
13	0.153	0.156	0.158	0.160	0.163
14	0.178	0.180	0.183	0.185	0.188
15	0.204	0.207	0.209	0.212	0.215
16	0.232	0.235	0.238	0,241	0.244
17	0.262	0.265	0.269	0.271	0.274
18	0.294	0.297	0.300	0.304	0.307
19	0,327	0.330	0.334	0.338	0.341
20	0.363	0.366	0.370	0.374	0.377
21	0.400	0.404	0.407	0.411	0.415
22	0.439	0.443	0.447	0.451	0.455
23	0.480	0.484	0.488	0,492	0.496
24	0.522	0.527	0.531	0.535	0.540
25	0.567	0.571	0.576	0.580	0.585
26	0.613	0.618	0.622	0.627	0,632
27	0.661	0.666	0.671	0.677	0.681
28	0.711	0.716	0.721	0.726	0.731
29	0.762	0.768	0.773	0.778	0.784
30	0.816	0.821	0.827	0.832	0.838

of Beer or Ale Veſſels.

Parts of an Inch.

Inches.	5	6	7	8	9
	G.pt.	G.pts	G pts	G pts	G.pts
1	0,003	0,0 3	0,003	0,003	0 004
2	0 006	0,006	0,007	0,0 7	0,008
3	0,011	0,012	0,012	0,013	0,014
4	0,0 8	0,019	0,020	0,021	0,022
5	0,027	0,028	0,029	0,030	0,032
6	0,038	0,039	0,041	0,042	0,043
7	0,051	0,052	0,054	0,055	0 057
8	0 065	0,067	0,069	0,070	0,072
9	0,082	0,084	0,085	0,087	0,089
10	0,100	0,102	0,104	0,106	0,108
11	0,120	0 122	0,124	0,126	0,128
12	0,142	0,144	0,146	0,148	0,151
13	0,165	0,168	0,170	0,173	0 175
14	0 191	0,193	0,196	0,199	0 201
15	0,218	0,221	0,223	0,226	0,229
16	0,247	0,250	0 253	0,256	0,259
17	0,278	0 281	0,284	0,287	0,290
18	0, 310	0 3 4	0 3 7	0 320	0 324
19	0,345	0 348	0 352	0,355	0 359
20	0,381	0,385	0,388	0,392	0,396
21	0,419	0,423	0 427	0,431	0 435
22	0,459	0,464	0 467	0,471	0 475
23	0 500	0,505	0,509	0,514	0 518
24	0,544	0,549	0,553	0,558	0 562
25	0,589	0 594	0 599	0,603	0 608
26	0,637	0 641	0,646	0,651	0 656
27	0 686	0,691	0,696	0 701	0 706
28	0 736	0,742	0,747	0,752	0 757
29	0,789	0,794	0,800	0,805	0 811
30	0,843	0 849	0,8 4	0,860	0 866

A Table for the Gauging

Parts of Inches.

Inches.	0	1	2	3	4
	G.pts	*G.prs*	*G.pts*	*G.pts*	*G.pts*
31	0.871	0.077	0.883	0 888	0.894
32	0.928	0 934	0.940	0 946	0.952
33	0.987	0.993	0.999	1.005	1.011
34	1.048	1.054	1.061	1.067	1.073
35	1.111	1.117	1.123	1.130	1.136
36	1.175	1.181	1.188	1.195	1 201
37	1.241	1.248	1.255	1.261	1.268
38	1.309	1.316	1.323	1.330	1.337
39	1.379	1.386	1.399	1.400	1.407
40	1.449	1.457	1.465	1 472	1.480
41	1.524	1.532	1.539	1.547	1.554
42	1.599	1.607	1.615	1.623	1.630
43	1.676	1 684	1.692	1.700	1.708
44	1.755	1.763	1.771	1.779	1.787
45	1.836	1.844	1.852	1.861	1.869
46	1.919	1.927	1.935	1 944	1.952
47	2.003	2.011	2 020	2.029	2.037
48	2.089	2 098	2.106	2.115	2.124
49	2.177	2 186	2.194	2.203	2.212
50	2 266	2.275	2 285	2.294	2.303
51	2.358	2.367	2 377	2.386	2.395
52	2.451	2.460	2.470	2.480	2 487
53	2.546	2.556	2.566	2 576	2 587
54	2.644	2.654	2.663	2.673	2.683
55	2.742	2.752	2.762	2.772	2.782
56	2.842	2.853	2.863	2.873	2.884
57	2 946	2.956	2.966	2.977	2.687
58	3.050	3.060	3.071	3.081	3.092
59	3.156	3 166	3.177	3.188	3.199
60	3.264	3.274	3.285	3.296	3.307

of Beer or Ale Vessels.

Parts of Inches.

Inches.	5 G.prs	6 G.prs	7 G.prs	8 G.prs	9 G.prs
31	0.900	0.905	0 911	0.917	0 923
32	0.968	0.964	0 969	0 975	0.981
33	1.017	1.024	1.030	0. 036	1 042
34	1.079	1.084	1 092	1.098	1.104
35	1.143	1.149	1.155	1.162	1.168
36	1.208	1.215	1 221	1.228	1.234
37	1.275	1.282	1 288	1 295	1.302
38	1.344	1.351	1.358	1.365	1 372
39	1.415	1.422	1.429	1.436	1 443
40	1.487	1.494	1 502	1 509	1 517
41	1.561	1.569	1 577	1.584	1.592
42	1.638	1.645	1 653	1 661	1.669
43	1.716	1.724	1.730	1 739	1.747
44	1.795	1.803	1 812	1.820	1 828
45	1.877	1.885	1 893	1 902	1 910
46	1.960	1.969	1 977	1 986	1 994
47	2 046	2.054	2 062	2 071	2 080
48	2.133	2.142	2 150	2 159	2 168
49	2.221	2.230	2.239	2.248	2.257
50	2.312	2.322	2 330	2 340	2 349
51	2.405	2.414	2 423	2 433	2.442
52	2 499	2.509	2 518	2.527	2.537
53	2.595	2.605	2 614	2.624	2.634
54	2.693	2.703	2 713	2.723	2 732
55	2.792	2.802	2.813	2 823	2.833
56	2.894	2 904	2 914	2 925	2.035
57	2.998	3.008	3 018	3 028	3.039
58	3.102	3 113	3 124	3 134	3 145
59	3.210	3 221	3 231	3 242	3 253
60	3.318	3 329	3 340	3 351	3 362

If you would draw this Table into a line, to set upon a Gauging-Rod, as you did before for the Wine-measure, you must work after the like proportion, altering the number, which must be 272, as was found before.

As 272 to 3. so 1 to —— 11029,411765.

This number or the 7 first figures thereof multiplied by the parts of your line, the square root extracted from that product, will give you the length of the Gauge-line in inches and parts.

Parts	*Squares*	*Roots*	*Inches parts*
1	1102941	1050	1,050
10	11029411	3321	3,321
100	110294117	10502	10,502
1000	1102941176	33210	33,210

But this being somewhat troublesome, I have calculated this table to your hands, so that thereby dividing your gauging rod into Inches, and decimal parts, you may easily set these lines upon your Rod. which being truly and handsomely set off, will be more ready and exact for use than the Tables can be, they giving but to the 10th. part of an inch, this visibly shewing to the 100 part of an inch.

A Table to divide a Gauging-Rod for Beer-Measure.

Parts of the Gauging Rod.

Rod.	In parts	Rod	In parts	Rod	In parts
1	1.050	160	13.284	400	21.004
2	1.485	170	13.693	410	21.265
3	1.819	180	14.090	420	21.523
4	2.102	190	14.476	430	21.778
5	2.348	200	14.852	440	22.029
6	2.572	210	15.219	450	22.278
7	2.779	220	15.577	460	22.524
8	2.972	230	15.927	470	22.768
9	3.151	240	16.270	480	23.009
10	3.321	250	16.605	490	23.247
20	4.696	260	16.934	500	23.483
30	5.752	270	17.257	510	23.717
40	6.642	280	17.573	520	23.948
50	7.426	290	17.885	530	24.178
60	8.135	300	18.190	540	24.405
70	8.787	310	18.491	550	24.630
80	9.393	320	18.787	560	24.852
90	9.963	330	19.078	570	25.072
100	10.502	340	19.365	580	25.291
110	11.015	350	19.647	590	25.509
120	11.504	360	19.926	600	25.724
130	11.974	370	20.201	610	25.938
140	12.426	380	20.473	620	26.150
150	12.562	390	20.740	630	26.360

A Table to divide a Gauging Rod for Beer or Ale-Measure.

Rod.	In. parts	Rod.	In. parts	Rod.	In part
640	26.568	880	31.154	2200	49.259
650	26.775	890	31.330	2300	50.366
660	26.980	900	31.506	2400	51.450
670	27.184	910	31.680	2500	52.510
680	27.386	920	31.854	2600	53.550
690	27.587	930	32.027	2700	54.571
700	27.786	940	32.199	2800	55.572
710	27.084	950	32.370	2900	56.556
720	28.180	960	32.540	3000	57.523
730	28.375	970	32.709	3100	58.473
740	28.569	980	32.877	3200	59.409
750	28.761	990	33.044	3300	60.330
760	28.952	1000	33.210	3400	61.237
770	29.142	1100	34.831	3500	62.131
780	29.331	1200	36.380	3600	63.013
790	29.519	1300	37.866	3700	63.882
800	29.705	1400	39.295	3800	64.739
810	29.890	1500	40.675	3900	65.586
820	30.073	1600	42.009	4000	66.421
830	30.256	1700	43.301	4100	67.246
840	30.438	1800	44.556	4200	68.062
850	30.619	1900	45.778	4300	68.867
860	30.799	2000	46.967	4400	69.663
870	30.977	2100	48.126	4500	70.450

Ad-

Additions of Gauging.

Shewing how to Gauge great Tuns.

SInce my firſt publiſhing of theſe Tables of Gauging, there hath been much uſe (by reaſon of the Collection of the Exciſe of Beer and Ale) to meaſure the large Tuns and Veſſels of Brewers, that ſo it may be known how many Barrels they hold: therfore I ſhall adde ſomewhat concerning this as briefly as I can.

Now theſe Tuns are either made ſquare or round. If theſe Tuns be ſquare, then the plain and primary way of meaſuring them, is to take their length and breadth in feet, or inches; and ſo multiplying the one by the other, to find the content of the plain or bottom thereof, for one inch in depth: Then multiplying this by the whole depth meaſured in inches, you have the whole content of the Tun in ſquare inches: Laſtly, dividing this by the ſquare inches which are in one Gallon, you may find how many Gallons it holds, and ſo eaſily reduce it into Barrels, or what you will.

If

If these Tuns are round, then you must measure their Compass, and Diameter (or find out one by the other according to art) and multiply the half of the one, by the half of the other; So you shall have the content of the plain or bottom of the Tun in square inches; which multiplied by the Inches of the depth, shews the content of the whole Tun in square inches: which you may reduce and bring into Gallons or Barrels, as before.

But in the reduction of these square inches into Gallons, there hath been a great contest how many square inches are in the Beer or Ale-Gallon. The Collectors of the Excise would reckon but 272 inches in the Gallon, according to Mr. *Oughtreds* experiment. The more ancient Artist and the Coopers allow 288 $\frac{3}{4}$ inches, and I suppose they are in the right, their scantlings agreeing so well therewith, as I shewed before in the Barrel and Kilderkin; and therefore I have still retained that number, and those Tables for the gauging of Barrels, and such like Vessels,

But because it is agreed upon between the Collectors of Excise, and the Brewers, that the Gallon should be reckoned to hold 282 square inches, I have therefore framed this Table for the measuring of these great Tuns

Tuns, according to this proportion.

Now this Table being very brief (having for want of room contracted it into two little pages, which may very well take up ten times as much) if you have much use thereof you may inlarge it as you please or if you be a little the more careful, to observe these directions in the use thereof, it will do your business as well as a larger Table.

For the understanding hereof you must take notice, that this Table is only made for even feet, and shews the true quantity of the plane, of any square Vessel or Tun, whose length and breadth you know from one foot square, to twenty foot square; reckoning the said plane to be but one inch deep. This content is set down in the Table in Barrels and parts of a Barrel, reckoning after this manner.

	parts.
Every Barrel contains	10000
Every Kilderkin contains	5000
Every Firkin contains	2500
Every Gallon contains	0278
Every Pottle contains	0139
Every Quart contains	0069½
Every Pint contains	0035

A Table shewing the Content of any Square Tun, in Barrels, and 10000 parts.

Feet of the length or breadth.	XX	XIX	XVIII	XVII	XVI
	B pts.	B. pts.	B. pts.	B. pts.	B. pts.
20	5.6739	5.3900	5.1164	4.8228	4.5392
		5.1205	4.8511	4 5817	4.3122
			4.5958	4.3406	4 0852
	I			4.0994	3.8583
1	0.0142	II			3.6314
2	0.0284	0.0567	III		
3	0 0426	0.0051	0.1277	IIII	
4	0.0567	0.1135	0.1702	0.2270	V
5	0.0709	0.1418	0.2128	0. 837	0.3546
6	0.0851	0.1702	0.2553	0 3404	0.4255
7	0.0993	0.1986	0.2979	0.3972	0.4965
8	0.1135	0.2270	0.3424	0 4539	0.5674
9	0.1277	0.2553	0.3830	0.5106	0.6383
10	0.1418	0.2837	0.4255	0 5674	0.7092
11	0.1560	0.3120	0.4600	0.6241	0.7801
12	0.1702	0.3404	0.5106	0.6808	0.8510
13	0.1844	0.3608	0.5532	0.7376	0.9220
14	0.1986	0.3972	0.5958	0.7944	0.9929
15	0.2128	0.4254	0,6383	0.8511	1.0639
16	0.2269	0.4538	0.6809	0.9078	1.1348
17	0.2411	0.4823	0.7234	0.9646	1.2057
18	0.2553	0.5106	0.7659	1.0212	1.2766
19	0.2695	0.5390	0.8085	1.0780	1.3475
20	0.2837	0 5674	0.8511	1.1348	1 4184
	I	II	III	IIII	V

Feet of the length or breadth.

A Table shewing the content of any square Tun in Barrels, and 10000 parts,

Feet of the length or breadth.

XV	XIV	XIII	XII	XI	
B. pts.	B. pts.	B. pts.	B. pts.	B. pts.	
4.2554	3.9716	3.6880	3.4044	3.1206	20
4.0426	3.7731	3.5036	3.2340	2.9645	19
3 8298	3.5746	3.3192	3.0663	2.8084	18
3.6172	3.3760	3.1348	2.8914	2.6524	17
3.4044	3.1774	2.9504	2.7232	2.4964	16
3.1916	2.9788	2.7660	2.5530	2.3303	15
	2.7802	2.5816	2.3828	2.1842	14
		2 3972	2.2126	2.0282	13
VI			2.0424	1.8722	12
0.5106	VII			1.7162	11
0 5950	0.6951	VIII			
0.6808	0.7944	0.9080	IX		
0.7660	0.8937	1.0214	1.1486	X	
0.8511	0.9929	1.1348	1.2766	1 4184	10
0.9361	1.0921	1.2402	1.4042	1 5603	11
1.0212	1.1914	1.3616	1.5318	1.7022	12
1.1064	1.2908	1.4752	1.6596	1.8440	13
1.1915	1.3901	1.5887	1.7873	1.9858	14
1.2766	1.4894	1.7022	1.9149	2.1277	15
1.3618	1.5887	1.8157	2.0426	2.2696	16
1.4468	1.6880	1.9291	2.1703	2.4114	17
1.5319	1.787:	2. 425	2.2979	2.5532	18
1 6170	1.8865	2.1560	2.4255	2.6950	19
1.7022	1.9859	2.2696	2.5532	2.8368	20
VI	VII	VIII	IX	X	

Feet of the length or breadth.

The uſe of this Table will moſt plainly appear, in the anſwering theſe queſtions.

1. Queſtion. *I would know the content of the bottom of a Tun, which is ſix foot ſquare each way.*

Anſw. Look where you find ſix foot in the ſide of the Table, and VI foot in the bottom or upper part of the Table meet in a ſquare, and there you ſhall find 0, 5106, which ſhews that a Tun being ſix foot ſquare, holds 0 Barrels, 5106 parts, that is half a Barrel, and a little more. For 5000 parts is a Kilderkin, or half a Barrel, and 106 pints is about three parts over.

2. Queſtion. *A Tun is nine foot one way, and four foot the other way: What is the content?*

Anſw. Find where 9 foot in the ſide of the Table, and IIII foot in the bottom or upper part of the Table meet, and in the ſquare thereof you ſhall find 0, 5106, which is the ſame content as before. For as 6 times 6 foot, is 36 foot, ſo 4 times 9 foot is alſo 36 foot.

Now you muſt underſtand, that this is the content not of the whole Tun, but only of the plain of the bottom thereof; reckoning the depth of the liquor therein to be juſt one inch. So that if the Tun, or liquor in the Veſſel be 10 inches deep, then the

the content thereof will be 10 times as much, *viz.* 05,1060, that is 5 Barrels, and 1060 parts. If the Tun or depth of the liquor be 20 inches deep, then it is 20 times as much, that is 10, 2120, or 10 Barrels, 2120 parts, and ſo you muſt ſtill multiply the content of the bottom of the Tun, by the number of the inches of the depth of the Tun, or Liquor, and it will give you the content of the whole Tun; all beyond the fourth figure being ſo many Barrels, and the 4 laſt figures ſhew the parts under a Barrel.

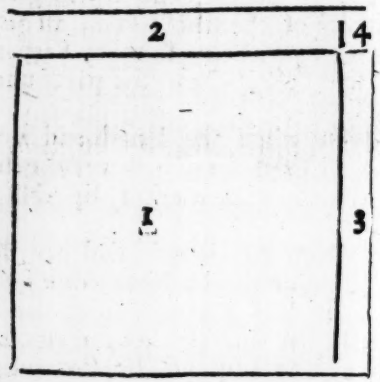
And thus when the length and breadth fall out in even feet, it is very eaſie to know the contents thereof by this little Table.

But when the length and breadth of theſe Tuns fall out to be an odde half, or quarter or third part of a foot, the Table muſt either be inlarged, or the labour and care in caſting it up will be ſomewhat the more; which you may do well enough by this Table, by allowing the part proportional between the two, or rather the four neareſt numbers, which to thoſe uſed to theſe Tables, will be very ready and eaſie.

But if you will be more exact, then divide your meaſuring Rod, or Ruler, firſt into feet, and then let every foot be divid-

ded into ten equal parts, which I ſuppoſe will be exact enough for this buſineſs of meaſuring.

Then you muſt ſuppoſe the plain or bottom of the Tun you are to meaſure, to be divided into 4 unequal ſquares, or parts, after this manner, expreſſed by theſe figures, 1, 2, 3, 4.



The firſt is the great ſquare made by the even feet.

The ſecond, and third are two long ſquares on the ſide of the great ſquare, which are made by the odde parts of the foot, but are equal in length to the great ſquare of even feet.

The

The fourth is the little ſquare in the corner, made only by the odd parts of the foot, over and above the length of the even feet.

Thus, if a Tun be 6 foot and an half ſquare, that is, 6 foot, and 5 parts of your rod on each ſide.

The firſt or great ſquare, will be ſix foot ſquare every way, and the content thereof will be found by the Table as before, to be o B, 5106 parts.

The ſecond ſquare is the long narrow ſquare on the upper ſide of the great ſquare, which is ſix foot long, and half a foot, or 5 ten parts of a foot wide. And the content hereof is found by looking the length thereof, which is ſix foot in the ſide of the Table, and the breadth thereof, which is 5 ten parts of a foot in the bottom of the Table, accounting the Numeral Letters, I, II, III, IV, V, *&c.* which before ſtood for feet, now to ſtand but for ten parts of a foot: and taking the number which you find in the ſquare meeting thereof, cut off the laſt figure, and ſet the reſt a place forwarder. Now for 6 foot in the ſide, and V parts in the bottom, you ſhall find o, 4255, which cutting off the laſt figure, it will be o,0425, which is the content of this long narrow ſquare, marked 2.

The third ſquare in this example is juſt equal to the former, being ſix foot long, and half a foot broad, and ſo only needs repeating. But if it differ from it, the content thereof, muſt be found out as in the other long ſquare.

Laſtly, the 4th. little ſquare in the corner is only half a foot, that is 5 parts of a foot every way; and the content hereof is found by ſeeking out theſe numbers in the ſide, and the bottom of the Table as before; and cutting off the two laſt figures of the number found. Thus for 5 in the ſide, and V in the bottom, you will finde 0, 3546, which cutting off the two laſt figures, will yeild 0, 0035, for the content thereof.

Now if you adde theſe 4 parts together, they will ſhew the true content of the whole ſquare.

	B. parts.
The firſt ſquare is	0,5106
The ſecond ſquare is	0,0425
The third ſquare is	0,0425
The 4th. ſquare is	0,0035
The ſume of all four is,	0,5991

Which is the content of the whole ſquare, and if you multiply this by the inches

ches of the depth, it will ſhew the content of the whole Tun.

Again, if the Tun be longer one way than the other, ther will be ſome difference in the two long ſide ſquares, but the operation is the ſame.

Suppoſe a Tun, 5 foot, 5 parts one way, and 6 foot 5 parts the other way. To find the content.

Firſt, in the great ſquare, 5 foot one way, and VI foot the other way, yields		0,4255
Secondly, 5 foot by V parts	yields, cutting off the laſt figure	0,0255
Thirdly, 6 foot by V parts		0,0425
Fourthly, 5 parts by V parts, yields, cutting off the 2 laſt figures.		0,0035
The Content of all		0,5070

Laſtly, if the parts of feet in the breadth of the ſide ſquares be not equal, it will be needfull to write them down croſs ways.

Thus the Tun being 6 foot 2 parts one way, and 5 foot 8 parts another way.

First, 6 *foot by V foot, yields,*				0,4255
Then 6 *f.* 2 *pts*	*that*	6 X 8	*yield*	0,0680
and 5 *f.* 8 *pts*	*is*	5 X 2	*yield*	0,0141
Lastly, 8 *parts by* 2 *parts, is*				0,0022
				0,5098

And thus you may find out the Content of any square Tun whatsoever, multiplying this Content of the bottom by the inches of the depth.

Rules for the measuring of round Tuns, or Vessels.

FIrst, you must observe whether the Tun be all of one breadth at the top and bottom or not. If it be of one and the same breadth at the top and the bottom, then it is a Cylinder, and this following Table (without any farther trouble) readily shews the Content thereof, according to the inches of the Diameter or breadth thereof, reckoning the liquor therein to be just one inch deep. and this Content is set down in Barrels, and 10000 parts of a Barrel, as before we reckoned in the square Tuns.

A Table, which by the Diameter of any round Tun, shews the content thereof in Barrels, and 10000. *parts.*

Inches of the Diameter.	B. parts.	D. in.	B. parts.	D. in.	B. parts.	D. inch	P. parts.
1	0.0001	31	0.0743	61	0.2879	91	0.6408
2	0.0005	32	0.0794	62	0.2974	92	0.6549
3	0.0007	33	0.0843	63	0.3071	93	0.6692
4	0.0012	34	0.0896	64	0.3169	94	0.6836
5	0.0019	35	0.0950	65	0.3269	95	0.6982
6	0.0028	36	0.1005	66	0.3371	96	0.7130
7	0.0038	37	0.1061	67	0.3474	97	0.7279
8	0.0050	38	0.1118	68	0.3578	98	0.7430
9	0.0063	39	0.1177	69	0.3684	99	0.7584
10	0.0077	40	0.1238	70	0.3791	100	0.7737
11	0.0094	41	0.1300	71	0.3900	101	0.7893
12	0.0112	42	0.1364	72	0.4011	102	0.8050
13	0.0131	43	0.1430	73	0.4124	103	0.8209
14	0.0152	44	0.1498	74	0.4238	104	0.8369
15	0.0174	45	0.1568	75	0.4353	105	0.8530
16	0.0198	46	0.1639	76	0.4469	106	0.8693
17	0.0223	47	0.1711	77	0.4588	107	0.8858
18	0.0256	48	0.1784	78	0.4708	108	0.9024
19	0.0279	49	0.1858	79	0.4830	109	0.9192
20	0.0308	50	0.1934	80	0.4953	110	0.9361
21	0.0341	51	0.2012	81	0.5078	111	0.9532
22	0.0374	52	0.2092	82	0.5203	112	0.9705
23	0.0409	53	0.2173	83	0.5331	113	0.9880
24	0.0445	54	0.2256	84	0.5460	114	1.0056
25	0.0484	55	0.2340	85	0.5591	115	1.0233
26	0.0523	56	0.2426	86	0.5723	116	1.0411
27	0.0564	57	0.2514	87	0.5857	117	1.0591
28	0.0606	58	0.2603	88	0.5992	118	1.0772
29	0.0650	59	0.2693	89	0.6129	119	1.0955
30	0.0696	60	0.2785	90	0.6268	120	1.1140

Thus a round Tun whoſe Diameter or breadth is 10 foot, or 120 inches, the content for one inch depth is, 1, 1140. that is, one Barrel, and 1140 parts. Now if this Tun or the liquor in it be 10 inches deep; then the content therof is 10 times as much; that is 11, 1400. If it be 20 inches deep, then it is 20 times as much; that is, 22, 2800, and ſo for any other depth, you muſt multiply the number found in the Table by the inches of the depth.

But if theſe Tuns be Conical, that is, narrower at the top than at the bottom, you may take the meaſure of the Diameter at the middle of the Tun, and find the content by the Table, as before. But this Content will be ſomewhat leſs than it ſhould be, and yet no great matter if the ſloaping of the Tun be not much, and the depth not much neither.

But if you will be more exact, you may take the Diameter of the Tun in 2 or 3 places, at every two or three foot of depth, and ſo find the content thereof at two or three times, as I ſhewed before in the meaſuring of tapering-Timber.

If you will yet be more exact, you may uſe Mr. *Oughtreds* way of meaſuring tapering Timber, which is thus:

Firſt finde the content of the Baſes at both

both ends, and multiply the one by the other, and out of the product thereof extract the ſquare root: then adde together the foreſaid content of both the Baſes, and that ſquare root, and multiply the ſumme thereof by a third part of the heighth or depth, and the product thereof ſhall give the content deſired.

Example.

Let there be a Tun 5 foot or 60 inches deep, the Diameter at the bottom 100 inches, the Diameter at the top 80 inches, the content whereof is to be found.

Firſt, you may find the content of the Baſes by the Table. Thus the Diameter at the bottom being 100 inches, the content thereof is, 0,7737. And the Diameter at the top being 80 inches, the content thereof is 0,4953. Now for the multiplying of theſe two Baſes together, and finding the ſquare root thereof, you may much help your ſelf by the Table of Logarithms, working in this manner.

	B. parts.	Logarithm.
The Base at bottom,	0,7737	0,888573
The Base at top,	0,4953	0,694868
The sum.		1,583441
The half of this is the Logarithm of the square root	0,6190	0,791720
The sum of the 2 Basses and this root is	1,8880	
which multiplied by a 3d. of the depth		20 *inches.*
Shews the Content	37,7600	

This is the true and exact content hereof, whereas if you should measure this Tun by the Diameter at the middle thereof, which is 90 inches; the Table shews the content for one inch, to be 0,6268. which multiplied by the depth 60 inches, it will yield for the content only 37,6080, which is short of the true content, 0,1520. which yet is no great matter, being but 5 Gallons and an half in a Vessel of 37 Barrels.

Lastly, if you measure the Diameter hereof in the midst between the top and the middle, and the bottom and the middle, as I said before.

So

So the upper or leſſer Diameter will be 85	
inches, for which the Table gives	0,5591
which multiplied by 30 *inches depth*	30
Yields for the content	16,7730
And the lower Diameter is 95 *inches, which in the Table yields*	0,6982
which multiplied by 30 *inches deep, yields for the content*	30
	20,9460
The ſum of both which together is	37,7190

Which is but 410 parts ſhort of the true content found by the moſt exact way, which is but a Gallon and half ſhort, in 37 or 38 Barrels

Laſt of all, I find ſome take the Diameter in the midſt of every foot, and ſo reckon how much every inch deep in that foot holds.

Thus the Diameters and content for the five ſeveral feet of this Tun will be thus:

Diam.

	Diam.	*the Inch.*	*the Foot.*
1	82	0,5203	6,2436
2	86	0,5723	6,8676
3	90	0,6262	7,5216
4	94	0,6836	8,2032
5	98	0,7430	8,9160
	The content in all		37,7520

which wants but 240 parts, which is not one Gallon, of the true content.

There remains now only the casting up of what is due for the Excise, in which this Table will direct you.

A Table of the Excise to be paid for Beer and Ale.

The number of Barrels.	Strong Ale is to pay 2 l. 10 s the Score, reckoning 22 Barrels to the score.				Strong Beer is to pay 2 l. 10 s. the score reckoning 23 Barrels to the score.				Small Beer is to pay 10 s the score reckoning 23 Barrels to the score.			
	l.	sh.	d.	q.	l.	sh.	d.	q.	l.	sh.	d.	q.
1	00	04	03	1	00	02	02	0	00	00	05	0
2	00	04	06	2	00	04	04	0	00	00	10	1
3	00	06	09	3	00	06	06	1	00	01	03	2
4	00	09	01	0	00	08	08	1	00	01	08	3
5	00	11	04	1	00	10	10	1	00	02	02	0
6	00	13	07	2	00	13	00	2	00	02	07	1
7	00	15	10	3	00	15	02	2	00	03	00	2
8	00	18	02	0	60	17	04	2	00	03	05	3
9	01	00	05	1	00	19	06	3	00	03	10	3
10	01	02	08	2	01	01	08	3	00	04	04	0
20	02	05	05	1	02	03	05	2	00	08	08	1
30	03	08	02	0	03	05	02	2	00	13	00	2
40	04	10	10	3	04	06	11	1	00	17	04	2
50	05	13	07	2	05	08	08	0	01	01	08	3
60	06	16	04	1	06	10	05	0	01	06	01	0
70	07	19	01	0	07	12	01	3	01	10	05	0
80	09	01	09	3	08	13	10	2	01	14	09	1
90	10	04	06	2	09	15	07	2	01	19	01	2
100	11	07	03	1	10	17	04	1	02	03	05	3
200	22	14	06	2	21	14	08	2	04	06	11	2
300	34	01	09	3	32	12	00	3	06	10	05	1
400	45	09	01	0	43	09	05	3	8	13	11	0
500	56	16	04	1	54	06	09	1	10	17	04	3
600	68	03	07	2	65	04	02	2	13	00	10	2
700	79	10	10	3	76	01	05	3	15	04	04	1
800	90	08	02	0	86	18	10	3	17	07	10	0
900	102	05	05	1	97	16	02	1	19	11	03	3
1000	113	12	08	2	108	13	06	2	21	14	09	2

Of weights.

THere are two ſorts of weights uſed by us in *England*, the one is called Troy-weight, the other is called Avoir-du-poiz, or over-weight. *Troy*-weight is thus ordered by the Statute, but yet the Standard-weights are the ſureſt trial of them.

24 grains of Wheat make a penny weight.
20 penny weights make an ounce.
12 ounces make a pound.

So there is 480 grains in the ounce, and 5760 grains in the pound.

By this weight Silver and Gold are conſtantly weighed, and the Aſſize of Bread is ſet down in the Statutes according to this weight.

Alſo the Apothecaries either do, or ſhould uſe this weight, only they divide the ounce into other parts and denominations, *viz.*

20 Grains make a Scruple,	20 gr.
3 Scruples make a Drachme,	60 gr.
8 Drachmes make an Ounce,	480 gr.
12 Ounces make a pound	5760 gr.

So that in this ounce, there is alſo 480 Grains, and therefore it muſt needs be the ſame with the Troy-Ounce, though many Authors miſtake this Ounce for the Avoir-du-

du-poize ounce, which ſhould have been more heedful therein.

Among the reſt, Mr. *John Penkethman* in his Book of the Aſſize of Bread, reckons the parts of the Avoir-du-poiz weight thus, 20 Grains make a Scruple, 3 Scruples a dram, 8 Drams an Ounce, 16 Ounces a Pound. This miſtake of his, and the like of others, led me into the like in my former Editions. But the beſt is, that he calculates his Tables upon a better obſervation, making 73 Ounces Troy, to be equal in weight with 80 Ounces Avoir-du-poiz.

And if you go to work by this obſervation, and the *Reverſe* or *Back-rule* of *Proportion*, you ſhall find,

As 73 *to* 80, *ſo* 480 *to* 438.

So that if the Troy ounce have 480 grains, the Avoir-du-poiz Ounce muſt have but 438 grains.

And this is the ordinary received proportion between the Troy-weight, and the Avoir-du-poiz, *viz.* 60 pounds Avoir-du-poiz are equal to 73 pounds Troy. And that 73 ounces Troy are equal to 60 Ounces Avoir-du-poiz. From which proportion Dr. *Wybard's* experiment differs a little making 14 li. Avoir-du-poiz to be equal to 17 li. Troy-weight; and 51 ounces Troy, to be equal to 56 ounces Avoir-du-poiz.

So

So that the ounce Troy is greater than the ounce Avoir-du-poiz, but the Troy pound is leſſer than the pound Avoir-du-poiz.

But now for the parts and denomination of the Avoir-du-poiz weight, we muſt find out ſome other rule, and I obſerve it is the nature of this weight, to take the whole great weight, which is either the Hundre', Pound, or Ounce (for the firſt foundation) and ſo to go downward, leſſening ſtill by half.

Thus the firſt great weight being 112 pounds, is called the Hundred.

The half of this being

- 56 pounds is called the half hundred.
- 28 pounds is the quarter of the hundr.
- 14 pounds half a quarter.
- 7 pounds.
- 4 pounds.
- 2 pounds.
- 1 *li.* is called one pound.
- *half a li.* is half a pound.
- *one quarter of a li.* is a quarter.
- *one eighth of a li.* is half a quarter.
- *one ſixteenth* is called an ounce.
- *half* an ounce.
- *a quarter* of an ounce.
- *one eighth* of an ounce is half a quarter
- *one ſixteenth* of an ounce is called a Dram.

So

So that there is 16 Drams in an ounce, and 16 ounces in the pound. And with theſe weights, you may weigh any thing from 2 C weight to a Dram, which you cannot well do with ſe ver.

There are ſome other denominations, of theſe weights in ſeveral places, as Stones, Cloves, Tods, Rooves, Weights, Loads, Fothers, Tuns, but they are all reduced into theſe weights, and regulated thereby.

According to theſe Obſervations, I have corrected theſe Tables of the Aſſize of Bread, which are thus to be uſed.

The manner of uſing theſe Tables of Bread.

FIrſt, you muſt conſider the price of Wheat in the Market, which muſt neither be of the beſt, nor worſt, but of the middling ſort and price. Then you muſt conſider whether the Baker be a Free-man of the City or Corporation-Town or not; for Freemen are allowed two ſhillings more upon the quarter, which is three pence in the Buſhel more for profit, than others which are not Free: the one being allowed ſix ſhillings in a quarter, the other but four. Theſe allowances are already abated for, in theſe Tables, ſo that without any farther allowance, find the price of Wheat on the one

ſide

ſide of the Table for free Bakers, or on the other ſide for Forreigners, and in the midſt you have the ſeveral weights, of the peny White, Wheaten, and Houſhold Loaves.

And the Law is very ſtrict againſt Bakers in caſe of offending. For if the Mayor or Bailiff find their Bread too light, they may take it away and give it to the poor of the Town, or Pariſh. And by the Statute of *Hen.* 3. 51. and *Eliz.* 31. If a Baker want but one Ounce in 36 of this Aſſize, for the firſt, ſecond, and third fault, he may be amerced; but for the fouth fault he is to be ſet in the Pillory without redemption.

A Table of the Assize of Bread by Troy-weight.

12 ounces in one li.	Weight of a peny Loaf.						20 peny w. in one ounce.		
	White.		Wheat.		Housh.				
The price of the Bushel of Wheat for Free Town-Bakers.	sh.	d.	oz.	d.	oz.	d.	sh.	d.	The price of the Bushel of Wheat for Forreigners.
	2	0	15	07	23	01	30	15	2	3	
	2	3	14	02	21	03	28	00	2	6	
	2	6	13	00	19	10	26	00	2	9	
	2	9	12	01	18	02	24	03	3	0	
	3	0	11	05	16	18	2	11	3	3	
	3	3	10	11	15	17	21	03	3	6	
	3	6	9	19	14	18	19	18	3	9	
	3	9	9	08	14	02	18	16	4	0	
	4	0	8	18	13	07	17	16	4	3	
	4	3	8	09	12	13	16	18	4	6	
	4	6	8	01	12	01	16	02	4	9	
	4	9	7	13	11	10	15	07	5	0	
	5	0	7	07	11	00	14	14	5	3	
	5	3	7	01	10	11	14	02	5	6	
	5	6	6	15	10	03	13	10	5	9	
	5	9	6	10	9	15	13	00	6	0	
	6	0	6	05	9	08	12	10	6	3	
	6	3	6	00	9	01	12	01	6	6	
	6	6	5	16	8	15	11	03	6	9	
	6	9	5	12	8	09	11	05	7	0	
	7	0	5	09	8	03	10	18	7	3	
	7	3	5	05	7	18	10	11	7	6	
	7	6	5	02	7	13	10	05	7	9	
	7	9	4	19	7	09	9	19	8	0	
	8	0	4	16	7	05	9	13	8	3	
	8	3	4	14	7	01	9	08	8	6	
	8	6	4	11	6	17	9	02	8	9	
	8	9	4	9	6	13	8	18	9	0	
	9	0	4	6	6	10	8	13	9	3	
	9	3	4	4	6	06	8	09	9	6	
	9	6	4	2	6	03	8	05	9	9	
	9	9	4	0	6	00	8	00	10	0	

A Table of the Assize of Bread by Avoir-du-poiz weight.

16 ounces in the li.	Weight of a peny Loaf.						16 drams in an ounce.	
	White.		Wheat.		Housh.			
The price of the Bushel of Wheat for Free Town-Bakers.	sh. d.	oz. d.	oz.	d.	oz.	d.	sh. d.	The price of the Bushel of Wheat for Forreigners.
	2 0	16 13	25	04	33	11	2 3	
	2 3	15 07	23	03	30	14	2 6	
	2 6	14 04	21	06	28	08	2 9	
	2 9	13 03	19	13	26	07	3 0	
	3 0	12 05	18	02	24	11	3 3	
	3 3	11 09	17	06	23	03	3 6	
	3 6	10 14	16	05	21	13	3 9	
	3 9	10 05	15	07	20	09	4 0	
	4 0	9 12	14	10	19	08	4 3	
	4 3	9 04	13	14	18	08	4 6	
	4 6	8 13	13	04	17	10	4 9	
	4 9	8 07	12	10	16	14	5 0	
	5 0	8 01	12	01	16	02	5 3	
	5 3	7 11	11	09	15	07	5 6	
	5 6	7 06	11	02	14	13	5 9	
	5 9	7 02	10	11	14	04	6 0	
	6 0	6 14	10	04	13	11	6 3	
	6 3	6 10	9	15	13	04	6 6	
	6 6	6 06	9	09	12	12	6 9	
	6 9	6 03	9	04	12	06	7 0	
	7 0	5 15	8	15	11	15	7 3	
	7 3	5 12	8	11	11	09	7 6	
	7 6	5 09	8	06	11	03	7 9	
	7 9	5 07	8	03	10	14	8 0	
	8 0	5 04	7	15	10	09	8 3	
	8 3	5 02	7	12	10	05	8 6	
	8 6	5 00	7	08	10	00	8 9	
	8 9	4 14	7	05	9	12	9 0	
	9 0	4 12	7	02	9	08	9 3	
	9 3	4 10	6	15	9	04	9 6	
	9 6	4 08	6	12	9	00	9 9	
	9 9	4 06	6	10	8	13	10 0	

Of Liquid or wet meaſures.

THere are four Meaſures for Liquid things in moſt uſe, the Pint, the Quart, the Pottle, and the Gallon. Other greater things being more properly veſſels to hold Liquor, than to meaſure it.

This are either doubled from the leſſer, or halfed from the greater, ſo that

Two Pints make a Quart,	or	half a Gallon is a Pottle.
Two Quarts make a Pottle.		half a Pottle is a Quart.
Two Pottles make a Gallon.		half a Quart is a Pint.

Or more fully thus.

	Pints.	*Quarts.*	*Pottles.*
In one Gallon are	8	4	2
Pottle	4	2	1
Quart	2	1	0

I ſhewed before there is ſuch a difference in theſe Meaſures for Beer and Wine, as there is between 4 and 5, ſo thar 4 Gallons of Beer meaſure is 5 of Wine-meaſure.

Now our Beer and Ale is usually reckoned, and sold by Barrels, Kilderkins, and Firkins.

If you would know how many Gallons, Quarts, or Pints are in any of these, these Tables will shew you.

For Beer-Vessels.

	Pints.	Quarts.	Pottles.	Gallons.
A Barrel is	288	144	72	36
A Kilderkin is	144	72	36	18
A Firkin is	72	36	18	9

For Ale-Vessels.

A Barrel holds	256	128	64	32
A Kild. holds	128	64	32	16
A Firkin holds	64	32	16	8

But this you may see, that as the Proverb saith, *Many hands* (so many mouths) *make quick work*. For there being but 118 quarts in a Barrel of Ale, 144 quarts in a barrel of Beer, a Company of Souldiers which are usually 130 or 140 men, may very well drink it up, it being but each man his quart. And by this you may in some sort know what will furnish a greater Army, or Navy. For, a Man of War having 250 men aboard, spends a Tun of Beer every day, each man being allowed his Kan, which is about a Wine-Gallon.

Wine

Wine-Vessels with their Contents are thus.

	Pints.	Quarts.	Pot.	Gall.
A Tun is	2016	1008	504	252
A Pipe or But	1008	504	252	126
A Punchion	672	336	168	84
A Hogshead holds	504	252	126	63
A Tierce of a Pipe	336	168	84	42
Half Hogshead	252	126	63	31½
A Rundlet holds	144	72	36	18

It is commonly thought that a Pint of Wine or Water weigheth a pound Troy, but it will be found rather toweigh a pound Avoir-du poiz. For Doctor *Wybard* having two or three experiments about this, by the Standard-Gallon at *Guild-Hall*, found that the Wine-Gallon of Water weighed 8 li. 1 ounce, 11 Drams by Avoir-du-poiz wt. at *Guild-Hall*, whereas it weighed 9 pound 10 ounces, 1 Dram, 1 quarter by the *Troy* weights at *Gold-Smiths Hall*. So that a pint of water is one pound and a quarter of an ounce by Avoir-du-poiz. But by other mens observations it is found somewhat above, *viz.* that a pint of Wine should weigh one pound, and about half an ounce, yet Wine is somewhat lighter than Water, as there is also some difference in the weight of waters though not much.

And according to some Observations this

way, methinks the Content of a Veſſel might in ſome ſort (though not altogether ſo exactly) be known, as well as by Gauging.

To this end take theſe Obſervations, which were given me, and you may make trial and uſe of them as you find them.

Names of the Veſſels.	*Wine Gallons*	*Tare* C. q. li.	*Weight.* C. q. li.
Rundlet contains	$18\frac{1}{2}$	0 0 23	1 1 14
Beer Barrel	45	0 2 0	3 1 11
Half Hogſhead	$31\frac{1}{2}$	0 1 22	2 1 11
Tierce	42	0 2 14	30 14
Rochel Hogſhead	46	0 2 17	3 1 20
High-Countrey Hogſhead	54	0 2 27	4 0 6
Graves Hogſhead	63	0 3 6	4 2 22
Punchion	84	0 3 22	6 1 2
Maligo But	112	1 0 18	8 1 12
Canary Pipe	116	1 0 20	8 2 17
Malmsby Butt	126	1 1 0	9 1 17

☞ This may be further improved by conſidering the weight of other things compared together, which I find thus ſet down in *Gerard Malynes, Lex Mercatoria*, pag. 30.

The

The *Amphora* of the *Romans* weights in *Antwerp* weights, whereof 112l. at *London* makes 107 5/8 at *Antwerp*

	li.
Of Wine, or rain water	50
Of River-water	53
Of Oyle or Butter	45
Of Beans and Peaſe	35
Of Linſeed Oyl	39
Of Corn	40
Of Almonds	42
Of Raiſins	49
Of Figs and Cheſnuts	67
Of Honey	75
Of Quick-ſilver	850

Of dry Meaſure.

Corn or Grain is meaſured by Gallons, but this Gallon is neither the Wine Gallon not the Ale-Gallon: but in the midſt between both, they being in proportion as 28, 33, 35. The common names and content of the Meaſures of theſe things are thus.

	A Laſt.	*Quar.*	*Cornook.*	*Strike.*	*Buſh.*
Pints	5120	512	256	128	64
Quarts	2560	256	128	64	32
Pottles	1280	128	84	32	16
Gallons	640	64	32	16	8
Pecks	320	32	16	8	4
Buſhels	80	8	4	2	1
Strikes	40	4	2	1	
Cornooks	20	2	1		
Quarters	10	1			

By this you may ſee that 500 men may very well ſpend a quarter of Wheat every day, it being but about a li. for a each man. And a Regiment of Horſe being about 600 may ſpend a Laſt, or ten Quarters of Oats every day, it being but little above a Gallon, or half a Peck for each Horſe, *viz.* 640 Gallons. By this a Governour of a Caſtle may gheſs, how to furniſh a place with theſe things, to hold out any time; or may know how long he is able to hold out, with the Proviſion he hath.

Sea Coals and Salt are alſo meaſured by theſe Pecks and Buſhels, but then they are either heaped, or elſe there is allowed five ſtriked Pecks to the Buſhel, and this is called water-meaſure. Thirty and ſix ſuch heaped Buſhels are a Chaldron of Coals; yet on Shipboard they allow 21 Chaldron to the Score.

Obſervations about Gold, Silver, and other Mettals.

Gold is the moſt worth of any Mettal.

The worth of Gold.

Of

Of Gold.		li.	s.	d.	q.
One pound weight	Troy is worth.	40	0	0	0
One ounce		3	6	8	0
One penny-weight		0	3	4	0
One Grain.		0	0	1	2

This is the price of ordinary Gold.

Angel-Gold is worth somwhat more, and Sovereign Gold somewhat less.

The worth of Silver.

		li.	s.	d.	q.
One pound weight	Troy is worth.	3	0	0	0
One Ounce		0	5	0	0
One penny-weight		0		3	0
One Grain		0	0	0	0½

But of English Coin.

		l.	s.	d.	q.
Of Gold	one pound Troy weight is worth	40	18	4	3
Of Silver		3	2	0	0

And by proportion.

Of Gold	One pound weight Avoir-du-poiz	49	13	8	1
Of Silver		3	15	3	2

By this account 100 *l. pound* of Silver money weighs 26 *l.* 9 ounces *Avoir-du-poiz*.

And 100 *l.* in Gold weighs fully two pounds *Avoir-du-poiz*, and about a quarter of an Ounce over.

As Gold is more worth, so it is more weighty than any other Mettal. So that if you

ſhould caſt 7 Bullets of theſe ſeveral Mettals, their weights will have this proportion one to the other.

Gold	10000	*Silver*	5437
Quick-ſilver	7143	*Braſs*	4737
Lead	6053	*Iron*	4210
		Tin	3895

Hence there may be a good Experiment for the Trial of counterfeit Gold. For Gold being heavier than Lead by about a third part, and heavier than Silver by about an half, no counterfeit pence can be made of theſe or any Mettals which are lighter, but the difference may be diſcerned, and ſuſpected either by the breadth or thickneſs.

But if this difference be not thus diſcerned or only ſuſpected, you may make a more certain trial by weighing it in the water, as *Archimedes* did the golden Crown.

For this is a ſure rule in the Art Statick, that every thing being in the water, doth loſe ſo much of his proper weight, as the quantity or bulk of ſo much Water doth weigh: ſo that Gold being ſcarce half the quantity of Braſs or Silver, doth ſcarce loſe half ſo much of its weight in the water, as Silver or Braſs will. As you may ſee plainly by weighing a twenty ſhillings piece againſt his Braſs weight in the Water; let the ſcales be made to ſtand never ſo equal with them

them out of the water; yet put them in a pail of water, and weigh them there, and the Gold will weigh 10 or 12 grains heavier than the braſs weight.

And this putting of things into water may be of good uſe to meaſure ſmall irregular Bodies. For either by the riſing of the water in the Veſſel, or by the over-flowing of the Water, and weighing it, or rather meaſuring it in a fit Veſſel of ſome regular form, you may know the true quantity of the thing you deſire.

And if the body to be meaſured be great, you may make a little model thereof, allowing an inch, or a quarter of an inch for every foot. And thus you may know the burden or weight of any Ship.

If you want a fit veſſel to meaſure the water in, you may make uſe of Dr. *Wybard*'s Experiment concerning the weight of water, *viz.*

In Inch-meaſure.

The ounce Troy of Water, is one inch 8949 parts, of ſolid meaſure.

The ounce Avoir-du-poiz, is one inch 72556 parts.

In Foot-meaſure.

	F. Parts.
The ounce Troy of water is	0,001096.
The ounce Avoir-du-poiz, is	0,00099859

In Inch-Measure.

	Inch. Parts.
The pound Troy of Water, is	22. 7368.
The pound Avoir-du-poiz, is	27. 6 9.

In foot-Measure.

	F. Parts.
The pound Troy of water is	0,013158
The pound Avoir-du-poiz, is	0,115917

A foot square of water is 912 ounces Troy weight, which is 76 *l. Troy.* And the same in *Avoir-du-poiz* weight is 62 *l.* 588 parts, which is 62 l. 9 ounces, 6 Drams, and an half.

And though there may be some difference between Rain Water, River Water, and Fountain water, yet the difference is not so much as *Snellius* makes it, *viz.* as 1000000 to 1007522. But the greatest difference Dr. *Wybard* could find, trying by several waters, was only as 1000000 to 1002104, being about 2 in 1000.

There is one experiment more concerning the finding of the time of the day, by those metals, which is approved of by the experience and judgment of many.

Having a Gold Ring and a Silver drinking Bowl, take a small thred or silk, and measure the compass of the top of the silver Boul, which will be a convenient length for your use: then put this thred through the

the Ring, and tie the ends thereof together, taking up as little as you can with the knots. Put this thred over your thumb, ſo that it may hang upon the lower joynt of your thumb where you feel the Pulſe beat, Then ſtretch out your hand, and hold it ſo that the inſide of your thumb may be upward, and hold your hand ſo over the Bowl, that the Ring may hang as near the midſt of the Bowl as you can gheſs. And thus holding your hand a while, as ſtill as you can, you ſhall ſee that the beating of your Pulſe will give a motion to the Ring, cauſing it to ſwing croſs the Bowl by degrees more and more, till at laſt it will beat againſt the ſides thereof: Now mark when it begins to ſtrike, and tell the ſtrokes as you would a Clock, for it will ſtrike what hour of the day or night it is, and then leave off ſtriking, and ſwinging alſo by degrees.

A Table of Multiplication:
Or,
Arithmetical proportion.

A Table of Arithmetical Proportions.

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	2	30	40	50	60	70	80	90	100
11	22	33	44	55	66	77	88	99	110
12	24	36	48	60	72	84	96	100	120
13	26	39	52	65	78	91	104	117	130
14	28	42	56	70	84	98	112	126	140
15	30	45	60	75	90	105	120	135	150
16	32	48	64	80	96	112	128	144	160
17	34	51	68	85	102	119	136	153	170
18	36	54	72	90	108	126	144	162	180
19	38	57	76	95	114	133	152	171	190
20	40	60	80	100	120	140	160	180	200
21	42	63	84	105	126	147	168	189	10
22	44	66	88	110	132	154	176	198	220
23	46	69	92	115	138	161	184	207	230
24	48	72	96	120	144	168	192	216	240
25	50	75	100	125	150	175	200	225	250
26	52	78	104	130	156	182	208	234	260
27	54	81	108	135	162	189	216	243	270
28	56	84	112	140	168	196	224	252	280
29	58	87	116	145	174	203	232	261	290
30	60	90	120	150	180	210	240	270	300
31	62	93	124	155	186	217	248	279	310
32	64	96	128	160	192	224	256	288	320
33	66	99	132	165	198	231	264	297	330
34	68	102	136	170	204	238	272	306	340
35	70	105	140	175	210	245	280	315	350

A Table of Arithmetical Proportions.

1	2	3	4	5	6	7	8	9	10
36	72	108	144	100	216	252	288	324	360
37	74	111	148	185	222	259	296	333	370
38	76	114	152	190	228	266	304	342	380
39	78	117	156	195	234	273	312	351	390
40	80	120	160	200	240	280	320	360	400
41	82	123	164	205	246	287	328	369	410
42	84	126	168	210	252	294	336	378	420
43	86	129	172	215	258	301	344	387	430
44	88	132	176	220	264	308	352	396	440
45	90	135	180	225	270	315	360	405	450
46	92	138	184	230	276	322	368	414	460
47	94	141	188	235	282	329	376	423	470
48	96	144	192	240	288	336	384	432	480
49	98	147	196	245	294	343	392	441	490
50	100	150	200	250	300	350	400	450	500
51	102	153	204	255	306	357	508	459	510
52	104	156	208	260	312	364	416	468	520
53	106	159	212	265	318	371	424	477	530
54	108	16	216	270	324	378	432	486	540
55	110	165	220	275	330	385	440	495	550
56	112	168	224	280	336	392	448	504	560
57	114	171	28	285	342	399	456	513	570
58	116	174	232	290	348	406	464	522	580
59	118	177	236	295	354	413	472	531	590
60	120	180	240	300	360	420	480	540	600
61	122	183	244	305	366	427	488	549	610
62	124	186	248	310	372	434	496	558	620
63	126	189	252	315	378	441	504	567	630
64	128	192	256	320	384	448	512	576	640
65	130	195	260	325	390	455	520	585	650
66	132	198	264	330	396	462	528	594	660
67	134	201	268	335	402	469	536	603	670
68	136	204	272	340	408	476	544	612	680
69	138	207	276	345	414	483	552	621	690
70	140	210	280	350	420	490	560	630	700

A Table of Arithmerical Proportions.

1	2	3	4	5	6	7	8	9	10
71	142	213	284	355	426	497	568	639	710
72	144	216	288	360	232	501	576	948	720
73	146	219	292	365	438	511	584	657	730
74	148	222	296	370	444	518	592	666	740
75	150	225	300	375	450	525	600	675	750
76	152	228	304	380	456	532	608	684	760
77	154	231	308	385	462	539	616	693	770
78	156	234	312	390	468	546	620	70	780
79	158	237	316	395	474	553	632	711	790
80	160	240	320	400	480	560	640	720	800
81	162	243	324	405	486	567	648	729	810
82	164	246	328	410	492	574	656	738	820
83	166	249	332	415	498	581	664	747	830
84	168	252	336	420	504	588	672	756	840
85	170	255	340	425	510	595	680	765	850
86	172	258	344	430	516	602	688	774	860
87	174	261	348	435	522	609	696	783	870
88	176	264	352	440	528	616	704	792	880
89	178	267	356	445	534	623	712	801	890
90	180	270	360	450	540	630	720	810	900
91	182	273	364	455	546	637	728	819	910
92	184	276	368	460	552	644	736	828	920
93	186	279	372	465	558	651	744	837	930
94	188	282	376	470	564	658	752	846	940
95	190	285	38	475	570	665	760	855	950
96	192	288	384	480	576	672	768	864	960
97	194	290	388	485	582	679	776	873	970
98	196	294	392	490	588	686	784	882	980
99	198	297	396	495	594	693	792	891	990
100	200	300	400	500	600	700	800	900	1000

The deſcription and uſe of the Table of Arithmetical Proportions.

I May well call it thus, becauſe it is uſeful in all the parts of Arithmetick; but eſpecially in *The Rule of proportion*, commonly called, *The Rule of Three*.

Firſt, It is a plain Table of Multiplication, and that not only of the digit-Numbers, 1, 2, 3, 4, *&c.* to 10, (which is uſual but to an 100.) And if you reckon the ſingle figures at the top of the Table to ſtand for 10, 20, 30, 40, and 100, and put, or ſuppoſe a Cypher to the numbers under them, the Table will reach to 100 ſquare. Thus, at the beginning of the Table you may reckon,

As 8 *times* 8 *is* 64, *ſo* 8 *times* 80 *is* 640.

Or at the end of the Table.

As 80 *times* 8 *is* 640, *ſo* 80 *times* 80 *is* 6400

The order of working by this Table, is as in moſt others, to find the one of your numbers on the ſide of the Table, and the other at the head, and in the ſquare of theſe two you ſhall find the product. And thus you ſhall find the multiplication of any two num-

numbers under 100, if the one of them have a cypher after it. But now at other times you must make two entrances for it, and so add them together.

Suppose the Roof of an house to be 12 foot and an half broad, on the one side (and so 25 foot on both sides the ridge) and 48 long, how many feet in all? and so how many squares of ten foot square therein? and how many Tiles will cover it.

To multiply the breadth,	25 *feet.*
By the length,	48 *feet.*
First, 8 times 25 is	200
And 4, or rather 40 times 25 is	1000
The whole Sum is	1200 *feet.*

Now their square being ten feet every way, contains 100 feet in the whole, so that cutting off the two last figures,
You have 12 squares of Tyling.

Now if you lay your Tyles but 3 Inches out, then 800 Tyles will cover one square. But if you lay them 3 inches and an half out (as you may, but must not exceed that) then 750 Tyles will cover one square. Now if 750 Tyles cover one square, how many will cover the the whole house, being 12 square

First,

First, you ſhall find 2 times 750 is	1500
Then 10 times 750 is	7500
In all	9000

And ſo many tyles will cover the whole houſe.

In like manner, if you know how many Bricks will make a foot, or a yard, or a rod of a Wall of one, two, or three Bricks thick, you may eaſily caſt up how many 1000 will build an houſe, or make a wall round about an Orchard, or a Park. And if you know how much Mortar will lay 1000 Bricks, and how many Bricks a Workman can lay in a day, you may eaſily count the charge of building of ſuch an Houſe, or Wall.

Suppoſe 4500 Bricks will make a Rod ſquare of a Wall, whoſe thickneſs ſhall be 13 Inches, or a Brick and an half thick. How many then will build an Houſe, whoſe height is 3 Rod, and the compaſs thereof 12 Rods.

First, multiply 3 by 12, and it makes 36 Rods in all, and multiply this by 4500

5 times 36 is	180,00
4 times 36 is	144
Setting them in their places and adding the Cyphers again, it makes	162000

Take

Take a queſtion or two of another nature:

A Captain is to receive 60 dayes or two moneths pay for his Souldiers, being 69 in number, how much will it come to at 8 d. a man every day?

This muſt be all brought firſt into 8 pences, thus:

You may ſee by the Table that 69 times 6 is 576, ſo that 96 times 60, is 5760 eight pence, which you may eaſily reckon up by the following Table of accounts to be 192 l.

Many ſuch queſtions may be anſwered by this Table, but you ſhall ſee that it may be uſeful to thoſe who are more skilful in multiplication, running over the work by two figures at once. and by careful ordering the figures, avoid much, or all of the carrying, which is troubleſome in the ordinary way, as you may ſee by theſe few examples.

28.34	19.28.34	
9	89	
306	171 306	
252	252	
25506	152 272	
	224	
	17162226	

The

The like helps you may find in Diviſion.

And if you would know how many ſhillings are in 108 pence, you muſt divide this number by 12, which are the pence in one ſhilling, which you ſhall do by finding 12 in the ſide of the Table, and running along in that line till you find the ſaid number 108, and this is juſt under nine, ſo that it ſhews there is juſt 9 ſhillings in 108 pence. But now if this number had a Cypher after it, *viz.* 1080, then it had been 90 ſhillings.

In like manner, if you would know how many Acres are in a piece of Land, whoſe content you find to be 1440 poles. Here being 160 Poles in one Acre, you muſt divide this number by 160, which becauſe it is not in the Table, leave out the cypher, and take the number 16, and in this line you ſhall find 144, which by adding your cypher again, makes 1440 under 9, ſo that there are nine Acres in the ſaid field.

Now though money will be better reduced by the following Table of Accounts, yet if you have occaſion for ſome ſuch common Diviſors, you may make a Table of them.

But the chiefeſt uſe of this Table will appear in the *Rule of Proportion*, commonly called the *Rule of Three*, wherein after the ordinary way, you muſt work firſt by Diviſion

on, and then by Multiplication, but by this table many useful Propositions may be performed, by inspection only, without either of them, and the four numbers will fall out in a square posture in the Table.

To this purpose, first find your first number on the side of the Table; and find your second number in the same line with it, observing well in which of the Columns it happens; then find your third Number likewise on the side of the Table under the first number, and in that line, in the very Column where your second number was found, you shall find the fourth number, which is the thing desired.

Thus you shall find that,

As 10 *to* 60, *so* 25 *to* 150.

which is thus wrought by the Table.

As 10 } *in the side* { *to* 60 } *in the sixth*
So 25 } *of the table* { *to* 150 } *Columne.*

The like proportion you shall find though you take your first and third Numbers, not in the first, but in any other Columne.

Thus you shall find in the beginning of the Table.

As 60 } *in the* { *to* 100 } *in the*
So 48 } *sixth Co-* { *to* 80 } *last Co-*
Or 36 } *lumne* { *to* 60 } *lumne.*

And thus if you leave out the last figure of these

theſe two Columns, or rather count them for decimal Fractions, they will be a very good Table of reduction between Sexageſſimal and Centeſſimal parts, for the proportion will hold either forward or backwards as thus,

As 10,0 } *in the* { *to* 6,0 } *in the*
So 20,0 } *tenth Co-* { *to* 12,0 } *ſixth Co-*
Or 30,0 } *lumne* { *to* 18,0 } *lumne*

Note alſo, if you change the places of your ſecond and third numbers, the concluſion will be the ſame, both the ordinary way by Arithmetick, and by this Table alſo, yea, though you find them in any other columns yet the ſquare of the Table will give the proportion.

Thus by Arithmetick.

As 10 *to* 25, *ſo* 60 *to* 150

And by the Table.

As 10 } *in the ſecond* { *to* 25 } *in the ſif*
So 60 } *Columne* { *to* 150 } *columne.*

Again, in decimal Fractions, the Table will very readily ſhew you the part proportional, according to any value of the Integer; or whole ſum. For if you ſeek the value of the whole either in the firſt or tenth Columne, the 9 other Columns in that Line ſhews the part proportional for each tenth part.

Thus let the whole number be 120, find this

this in the Table, and in that line you ſhall ſee, that one tenth part of it is 12; two tenth parts are 24; 3 are 36, 4 are 48, *&c.*

If you find the value in the firſt column, then the laſt figure of theſe Numbers are to be omitted, or rather reckoned for ſmaller decimal fractions. Thus the whole being 24, 1 tenth is 2, 14, two tenths are 4, 8. 3 tenths, are 7, 2, *&c.*

This Table will be of much uſe in any ſuch caſes unto Artiſts, eſpecially if it were extended to an 100 ſquare every way, as it ſhould be, and as it might be written or Printed in a ſheet of large Paper: and ſo it would be as uſeful a Table, or Inſtrument, as an Artiſt could have.

But to give you a queſtion of another nature, which may be of more general concernment.

Three men adventure ſeveral ſums of money in one ſtock: the firſt 90 *l.* the ſecond 210 *l.* the third 300 *l.* in all 600 *l.* and at the return it brings home 1000 *l.* what is each mans ſhare?

Here the proportion is as 600 to 1000. which you ſhall find at the latter end of the ſixth and tenth Columns, and ſo finding the reſt of the ſums in thoſe Columns, their ſhares will be thus.

As 600			*to* 1000		
So 90	*in the sixth*		*to* 150	*in the*	10
So 210	*Columne*		*to* 350	*Column.*	
So 300			*to* 500		

And thus you see how most questions, in all the parts of Arithmetick may be performed by this Table, which with a little use will be familiar to you.

A large Table of Accounts, for the ready casting up of the true value, of any great number of any Commodities.

A Table of Accounts.

	1 farthing				2 farthings				3 farthings			
	li.	sh.	d.	q.	li.	sh.	d.	q.	li.	sh.	d.	q.
1				1				2				3
2				2			1	0			1	2
3				3			1	2			2	1
4			1	0			2	0			3	0
5			1	1			2	2			3	3
6			1	2			3	0			4	2
7			1	3			3	2			5	1
8			2	0			4	0			6	0
9			2	1			4	2			6	3
10			2	2			5	0			7	2
20			5	0			10	0		1	3	0
30			7	2		1	3	0		1	10	2
40			10	0		1	8	0		2	6	0
50		1	0	2		2	1	0		3	1	2
60		1	0	0		2	6	0		3	9	0
70		1	5	2		2	11	0		4	4	2
80		1	8	0		3	4	0		5	6	0
90		1	10	2		3	9	0		5	7	2
100		2	1	0		4	2	0		6	3	0
200		4	2	0		8	4	0		12	6	0
300		6	3	0		12	6	0		18	9	0
400		8	4	0		16	8	0	1	5	0	0
500		10	5	0	1	0	10	0	1	11	3	0
600		12	6	0	1	5	0	0	1	17	6	0
700		14	7	0	1	9	2	0	2	3	9	0
800		16	8	0	1	13	4	0	2	10	0	0
900		18	9	0	1	17	6	0	2	16	3	0
1000	1	0	10	0	2	1	8	0	3	2	6	0
2000	2	1	8	0	4	3	4	0	6	05	0	0
5000	5	4	2	0	10	8	4	0	15	12	6	0
10000	10	8	4	0	20	16	8	0	31	5	0	0

Number of Ells, or such like.

A Table of Accounts.

Number of Ells, or such like.	1 peny			2 pence			3 pence		
	li.	sh.	d.	li.	sh.	d.	li.	sh.	d.
1			1			2			3
2			2			4			6
3			3			6			9
4			4			8		1	0
5			5			10		1	3
6			6		1	0		1	6
7			7		1	2		1	9
8			8		1	4		2	0
9			9		1	6		2	3
10			10		1	8		2	6
20		1	8		3	4		5	0
30		2	6		5	0		7	6
40		3	4		6	8		10	0
50		4	2		8	4		12	6
60		5	0		10	0		15	0
70		5	10		11	8		17	6
80		6	8		13	8	1	0	0
90		7	6		15	0	1	2	6
100		8	4		16	8	1	5	0
200		16	8	1	13	4	2	10	0
300	1	5	0		10	0	3	15	0
400	1	13	4	3	6	8	5	0	0
500	2	1	8	4	3	4	6	5	0
600	2	10	0	5	0	0	7	10	0
700	2	18	4	5	16	8	08	15	0
800	3	6	8	6	13	4	10	0	0
900	3	15	0	7	10	0	11	5	0
1000	4	3	4	8	6	8	12	10	0
2000	8	6	8	16	13	4	25	0	0
5000	20	16	8	41	13	4	62	10	0
10000	41	13	4	83	6	8	125	0	0

A Table of Accounts.

Number of Ells, or such like.	4 pence li.	sh.	d.	5 pence li.	sh.	d.	6 pence li.	sh.	d.
1			4			5			6
2			8			10		1	0
3		1	0		1	3		1	6
4		1	4		1	8		2	0
5		1	8		2	1		2	6
6		2	0		2	6		3	0
7		2	4		2	11		3	6
8		2	8		3	4		4	0
9		3	0		3	9		4	6
10		3	8		4	2		5	0
20		6	4		8	4		10	0
30		10	0		12	6		15	0
40		13	4		16	8	1	0	0
50		16	8	1	0	10	1	5	0
60	1	0	0	1	5	0	1	10	0
70	1	3	4	1	9	2	1	15	0
80	1	6	8	1	13	4	2	0	0
90	1	10	0	1	17	6	2	5	0
100	1	13	4	2	1	8	2	10	0
200	3	6	8	4	3	4	5	0	0
300	5	0	0	6	5	0	7	10	0
400	6	13	4	8	6	8	10	0	0
500	8	6	8	10	8	4	12	10	0
600	10	0	0	12	10	0	15	0	0
700	11	13	4	14	11	8	17	10	0
800	13	6	8	16	13	4	20	0	0
900	15	0	0	18	15	0	22	10	0
1000	16	13	4	20	16	8	25	0	0
2000	33	6	8	41	13	4	50	0	0
5000	83	6	8	104	3	4	125	0	0
10000	166	13	4	208	6	8	250	0	0

A Table of Accounts.

Number of Ells, or such like.	7 pence			8 pence			9 pence		
	li.	sh.	d.	li.	sh.	d.	li.	sh.	d.
1			7			8			9
2		1	2		1	4		1	6
3		1	9		2	0		2	3
4		2	4		2	8		3	6
5		2	11		3	4		3	9
6		3	6		4	0		4	6
7		4	1		4	8		5	3
8		4	8		5	4		6	0
9		5	3		6	0		6	9
10		5	10		6	0		7	6
20		11	8		13	4		15	0
30		17	6	1	0	0	1	2	6
40	1	3	4	1	6	8	1	10	0
50	1	9	2	1	13	4	1	17	6
60	1	12	0	2	0	0	2	5	0
70	2	0	10	2	6	8	2	12	6
80	2	6	8	3	13	4	3	0	0
90	2	12	6	3	0	0	3	7	6
100	2	18	4	3	6	8	3	15	6
200	5	16	8	6	13	4	7	10	0
300	8	15	0	10	0	0	11	5	0
400	11	13	4	13	6	8	15	0	0
500	14	11	8	16	13	4	18	15	0
600	17	10	0	20	0	0	22	10	0
700	20	8	4	23	6	8	26	5	0
800	23	6	8	26	13	4	30	0	0
900	26	5	0	30	0	0	33	15	0
1000	29	3	4	33	6	8	37	10	0
2000	58	6	8	66	13	4	75	0	0
5000	145	16	8	166	13	4	187	10	0
10000	291	13	4	333	6	8	375	0	0

A Table of Accounts.

Number of Ells, or such like.	10 pence			11 pence			12 pence		
	li.	sh.	d.	li.	sh.	d.	li.	sh.	d.
1			10			11		1	0
2		1	8		1	10		2	0
3		2	6		2	9		3	0
4		3	4		3	8		4	0
5		4	2		4	7		5	0
6		5	0		5	6		6	0
7		5	10		6	5		7	0
8		6	8		7	4		8	0
9		7	6		8	3		9	0
10		8	4		9	2		10	0
20		16	8		18	4	1	0	0
30	1	5	0	1	7	6	1	10	0
40	1	13	4	1	16	8	2	0	0
50	2	1	8	2	5	10	2	10	0
60	2	10	0	2	15	0	3	0	0
70	2	18	4	3	4	2	3	10	0
80	3	6	8	3	13	4	4	0	0
90	3	15	0	4	2	6	4	10	0
100	4	3	4	4	11	8	5	0	0
200	8	6	8	9	3	4	10	0	0
300	12	10	0	13	15	0	15	0	0
400	16	13	4	18	6	8	20	0	0
500	20	16	8	22	18	4	25	0	0
600	25	0	0	27	10	0	30	0	0
700	29	3	4	32	1	8	35	0	0
800	33	6	8	36	13	4	40	0	0
900	37	10	0	41	5	0	45	0	0
1000	41	13	4	45	16	8	50	0	0
2000	83	6	8	91	13	4	100	0	0
5000	208	16	8	229	3	4	250	0	0
10000	416	13	4	458	6	8	500	0	0

A Table of Accounts.

	2 shill.	3 shill.	4 shill.	5 shill.
	li. sh.	li. sh.	li. sh.	li. sh.
1	2	3	4	5
2	4	6	8	10
3	6	9	12	15
4	8	12	16	1 0
5	10	15	1 0	1 5
6	12	18	1 4	1 10
7	14	1 1	1 8	1 15
8	16	1 4	1 12	2 5
9	18	1 7	1 16	2 0
10	1 0	1 10	2 0	2 10
20	2 0	3 0	4 0	5 0
30	3 0	4 10	6 0	7 10
40	4 0	6 0	8 0	10 0
50	5 0	7 10	10 0	12 10
60	6 0	9 0	12 0	15 0
70	7 0	10 10	14 0	17 10
80	8 0	12 0	16 0	20 0
90	9 0	13 10	18 0	22 10
100	10 0	15 0	20 0	25 0
200	20 0	30 0	40 0	50 0
300	30 0	45 0	60 0	75 0
400	40 0	60 0	80 0	100 0
500	50 0	75 0	100 0	125 0
600	60 0	90 0	120 0	150 0
700	70 0	105 0	140 0	175 0
800	80 0	120 0	160 0	200 0
900	90 0	135 0	180 0	225 0
1000	100 0	150 0	200 0	250 0
2000	200 0	300 0	400 0	500 0
5000	500 0	750 0	1000 0	1250 0
10000	1000 0	1500 0	2020 0	2500 0

A Table of Accounts.

	6 shill.		7 shill.		8 shill.		9 shill.		10 shil.	
	li.	th.	li.	th.	li.	sh.	li.	th.	li.	th.
1		6		7		8		9		10
2		12		14		16		18	1	00
3		18	1	1	1	4	1	7	1	10
4	1	4	1	8	1	12	1	16	2	00
5	1	10	2	15	2	0	2	5	2	10
6	1	16	2	2	2	8	2	14	3	00
7	2	2	2	9	2	6	3	3	3	10
8	2	8	3	16	3	4	3	12	4	00
9	2	14	3	3	3	12	4	1	4	10
10	3	0	3	10	4	0	4	10	5	0
20	6	0	7	0	8	0	9	0	10	0
30	9	0	10	10	12	0	13	10	15	0
40	12	0	14	0	16	0	18	0	20	0
50	15	0	17	10	20	0	22	10	25	0
60	18	0	21	0	24	0	27	0	30	0
70	21	0	24	10	28	0	31	10	35	0
80	24	0	28	0	32	0	36	0	40	0
90	27	0	31	10	36	0	40	10	45	0
100	30	0	35	0	40	0	45	0	50	0
200	60	0	70	0	80	0	90	0	100	0
300	90	0	105	0	120	0	135	0	150	0
400	120	0	140	0	160	0	180	0	200	0
500	150	0	175	0	200	0	225	0	250	0
600	180	0	210	0	240	0	270	0	300	0
700	210	0	245	0	280	0	315	0	350	0
800	240	0	280	0	320	0	360	0	400	0
900	270	0	315	0	360	0	405	0	450	0
1000	300	0	350	0	400	0	450	0	500	0
2000	600	0	700	0	800	0	900	0	1000	0
5000	1000	0	1750	0	2000	0	2200	0	2500	0
10000	3000	0	3500	0	4000	0	4500	0	5000	0

The use of this Table of Accounts.

THis Table will serve for many uses, but that which it will be most used about, as being most necessary, is to find out the true account of any number of Ells, Yards, or Pounds, being sold for so much the Yard Ell, or Pound.

For Example.

What will 5000 Ells of Lockram at 11 pence the Ell come to?

To find out this, first look to the price of the Ell, at the head of the Table, then look down the side of the Table, for the number of the Ells, so you shall find in the last column but one in the Table, and in the last line but one thereof, that 5000 of any thing at 11 pence a piece, comes to 229 *l.* 3 *shill.* 4 *pence.*

Now if you cannot find your price in one Column, or your number of things in one line, you must make two or three parts thereof, and adde them altogether; as in the Tables of Interest and Rebate before.

Thus, if you would know what 1500 Ells at nine pence half penny comes to.

First, In the Table of nine pence.

	li.	*sh.*	*d.*
1000 *nine pences are*	37	10	00
and 500 *nine pences are*	18	15	00

Then in the Table of half pence,

1000 *half pence are*	02	01	08
and 500 *half pence are*	01	00	10
In all	59	07	06

You may make this work somewhat shorter, if you divide your numbers, so that they may lie together, and so take them both together out of the Table, by adding them in one sum. As now 700 & 800 make up 1500

Then		*li.*	*sh.*	*d.*
700, 800	*nine pences are*	56	5	0
	And			
700, 800	*half pence*	3	2	6
	In all	59	7	6

But the Table is so plain and useful, that you will easily find out ways of your self, to cast up any such account very certainly and suddenly thereby.

This Table also (if you have any occasion) will serve you as a Table of Interest at five *li. per Cent.* For if instead of the number of pence at the head of the Columnes, you reckon so many Moneths, then the sums underneath, will shew the true Interest due for any number of pounds set down in the side of the Table, just as before in the Table of Interest at six *per Centum*, *page* 71, 72, 73, 74, 75.

A neceſſary Table in buying and ſelling any thing by the Hundred.

Price of one pound d. q.	Price of an hundred weight. li. ſh. d.	Price of one pound d. q.	Price of an hundred weight. li. ſh. q.	Price of one pound d. q.	Price of an hundred weight. l. ſh. q.
0 1	0 2 4	6 1	2 18 4	12 1	5 14 4
0 2	0 4 8	6 2	3 0 8	12 2	5 16 8
0 3	0 7 0	6 3	3 3 0	12 3	5 19 0
1 0	0 9 4	7 0	3 5 4	13 0	6 1 4
1 1	0 11 8	7 1	3 7 8	13 1	6 3 8
1 2	0 14 0	7 2	3 10 0	13 2	6 6 0
1 3	0 16 4	7 3	3 12 4	13 3	6 8 4
2 0	0 18 8	8 0	3 14 8	14 0	6 10 8
2 1	1 1 0	8 1	3 17 0	14 1	6 13 0
2 2	1 3 4	8 2	3 19 4	14 2	6 15 4
2 3	1 5 8	8 3	4 1 8	14 3	6 17 8
3 0	1 8 0	9 0	4 4 0	15 0	7 0 0
3 1	1 10 4	9 1	4 6 4	15 1	7 2 4
3 2	1 12 8	9 2	4 8 8	15 2	7 4 8
3 3	1 15 0	9 3	4 11 0	15 3	7 7 0
4 0	1 17 4	10 0	4 13 4	16 0	7 9 4
4 1	1 19 8	10 1	4 15 8	16 1	7 11 8
4 2	2 2 0	10 2	4 18 0	16 2	7 14 0
4 3	2 4 4	10 3	5 0 4	16 3	7 16 4
5 0	2 6 8	11 0	5 2 8	17 0	7 18 8
5 1	2 9 0	11 1	5 5 0	17 1	8 1 0
5 2	2 11 4	11 2	5 7 4	17 2	8 3 4
5 3	2 13 8	11 3	5 9 8	17 3	8 5 8
6 0	2 16 0	12 0	5 12 0	18 0	8 8 0

The use of this Table.

BY this Table, knowing the price of one pound of any thing, you may know how much the hundred weight (being 112 pound) comes to. Or having bought any thing by the hundred weight, you may know how to retail it again by the pound. Thus if one pound of any thing cost four pence three farthings, a hundred weight of the same commodity will cost 2 pound, 4 shillings, and 4 pence. Also, if a hundred weight of any thing cost 4 pound, 6 shillings 4 pence, the price of one pound thereof will cost 9 pence farthing: the like may be done for any other. But if your commodity come to above 18 pence the pound, you may do it by the half of the price; or else reckon first for the shillings, and after for the rest of the price.

A Table of Expences or Wages, whereby knowing what is for one day, you may see what it is in a Week, Month, or Year.

By the day		By the week			By the month			By the year.		
		li.	sh.	d.	li.	sh.	d.	li.	sh.	d.
Pence	1	0	0	7	0	2	4	1	10	5
	2	0	1	2	0	4	8	3	0	10
	3	0	1	9	0	7	0	4	11	3
	4	0	2	4	0	9	4	6	1	8
	5	0	2	11	0	11	8	7	12	1
	6	0	3	6	0	14	0	9	2	6
	7	0	4	1	0	16	4	10	12	11
	8	0	4	8	0	18	8	12	3	4
	9	0	5	3	1	1	0	13	13	9
	10	0	5	10	1	3	4	15	4	2
	11	0	6	5	1	5	8	16	14	9
Shillings.	1	0	7	0	1	8	0	18	5	0
	2	0	14	0	2	16	0	36	10	0
	3	1	1	0	4	4	0	54	15	0
	4	1	8	0	5	12	0	73	0	0
	5	1	15	0	7	0	0	91	5	0
	6	2	2	0	8	8	0	109	10	0
	7	2	9	0	9	16	0	127	15	0
	8	2	16	0	11	4	0	146	0	0
	9	3	3	0	12	12	0	164	5	0
	10	3	10	0	14	0	0	182	10	0
	11	3	17	0	15	8	0	215	15	0
	12	4	4	0	16	16	0	219	0	0
	13	4	11	0	18	4	0	237	5	0
	14	4	18	0	19	12	0	255	10	0
	15	5	5	0	21	0	0	273	15	0
	16	5	12	0	22	8	0	292	0	0
	17	5	19	0	23	16	0	310	5	0
	18	6	6	0	25	4	0	328	10	0
	19	6	13	0	26	12	0	346	15	0
	20	7	0	0	28	0	0	365	0	0

In a year there are 365 dayes, and in one pound or twenty shillings there is 240 pence. So that one peny a day comes in the year to one pound, one half pound, one groat, and one peny; and thus you may reekon for any other number of pence.

As for Example, six pence a day.

is 6 pound	06	00	00
6 half pounds, which are	03	00	00
6 Groats, which are	00	02	00
6 Pence, which are	00	00	06
In all	09	02	06

Upon this Table you may make these and such like considerations.

A peny a day in one year comes to one li. 10. shill. and 5 d. Therefore in 21 years, it will come to 31 l. 18 shill. 9 d. This will come only by the saving thereof. But if you also employ this, so that it may gain after the rate of ten in the hundred, it will amount to above fourscore and six pounds in the said time, which may be a good portion for a mans child.

A Table of the Kings of *England*.

	Kings.	They began to Reign.	They reign'd yea.	mo.	da.
1	Will. Conq	1066 Octo. 14	20	11	22
2	Will. Rufu	1087 Sept. 9	12	11	18
3	Henry 1	1100 Auguſt 1	35	4	11
4	Stephen	1135 Decem. 2	18	11	18
5	Henry 2	1145 Octo. 25	34	9	2
6	Richard 1	1189 July 6	9	9	22
7	John	1199 April 6	17	7	0
8	Henry 3	1216 Octo. 19	56	1	0
9	Edward 1	1272 Nov. 16	34	8	9
10	Edward 2	1307 July 7	19	7	6
11	Edward 3	1326 Jan, 25	50	5	7
12	Richard 2	1277 June 21	22	3	14
13	Henry 4	1399 Sept. 29	13	6	3
14	Henry 5	1412 Marc. 20	9	5	24
15	Henry 6	1422 Aug 31	38	6	16
16	Edward 4	1460 March 4	22	1	8
17	Edward 5	1483 April 9	0	2	18
18	Richard 3	1483 June 22	2	2	5
19	Henry 7	1485 Aug. 22	23	8	19
20	Henry 8	1509 April 22	37	10	2
21	Edward 6	1546 Jan. 28	6	5	19
22	Mary	1553 July 6	5	4	22
23	Elizabeth	1558 Nov. 17	44	4	15
24	James	1602 Marc. 24	22	0	8
25	Charles I	1625 Marc. 27	23	11	2
26	Charles II	1648 Jan. 30	*Vivat Rex*		

The use of the Table of Kings.

THis Table of the Kings I suppose may be necessary in searching out the antiquity of many old Evidences, which are dated many times by the years of the King then reigning, and not by the years of our Lord. And it might be more plain and profitable if it were drawn out a little larger, but time and paper are wanting; I have only therefore as a pattern shewn how it might be done in this hundred years last past, and added some brief notes out of History thereunto, and added one Column shewing the years which are past, to this present year 1676.

The use of this Table will appear in such questions.

How long is it since the 25th year of King Henry *the Third?*

Which is thus found,

Henry 3 began to reign, *Anno Dom.*	1216.
To which adde the 25 years	25
So is it, *Anno Dom.*	1241
Which substracted from the present year	1676
There remains the years since	435

A brief Concordance of years with some memorable things since the beginning of the Reign of Queen Elizabeth.

Anno. Dom.	*A.* Re	*Since*	Queen *Elizabeth* began *Novemb.* 1558.
1558	1	118	A Parliament called
1559	2	117	Monasteries suppressed
1560	3	116	War with *Scots* and *French*
1561	4	115	*Pauls* Steeple burnt
1562	5	114	Tempest and Earthquake
1563	6	113	20000 dye of the Plague in
1564	7	112	*Thames* frozen (*London*
1565	8	111	Peace with *France*
1566	9	110	King *James* born
1567	10	109	Royal Exchange finished
1568	11	108	A Dry Summer
1569	12	107	Rebellion in the North
1570	13	106	Wars with *Scotland*
1571	14	105	Earthquake in *Herefordshire*
1572	15	104	Massacre in *France*
1573	16	103	Earl of *Essex* goes to *Ireland*
1574	17	102	Counterfeit Spirits punished
1575	18	101	An Earthquake
1576	19	100	*Forbishers* Morth Voyage
1577	20	99	Infection at *Oxford* Assizes
1578	21	98	A great Snow

Anno Dom.	Æra.	Since	Queen *Elizabeth.*
1579	22	97	A curious Lock-ſmith
1580	23	96	Great Earthq. and Blazing Star
1581	24	95	Three Jeſuites Executed
1582	25	94	New Kalendar began
1583	26	93	Earthquake in *Dorcetſhire*
1584	27	92	*Nantwich* burnt
1585	28	91	Tobacco firſt uſed in *England*
1586	29	90	*Ludgate* new built
1587	30	89	*Blackwel* Hall new built
1588	31	88	*Spains* Armado overthrown
1589	32	87	Duke of *Guiſe* murthered
1590	33	86	Blaſphemous *Hacket* hanged
1591	34	85	*Eaſt-India* Company began
1592	35	84	The *Thames* almoſt dry
1593	36	83	10635 died of the Pl. in *London*
1594	37	82	Great Tempeſt
1595	38	81	Scarcity of Corn
1596	39	80	E *Eſſex* takes *Cadiz* in *Spain*
1597	40	79	Wheat 13 ſhillings a Buſhel
1598	41	78	Great Tempeſts and Froſts
1599	42	77	Earl of *Eſſex* goes to *Ireland*
1600	43	76	Ambaſſ. from *Ruſſia* & *Barbary*
1601	44	75	Earl of *Eſſex* beheaded
1602	45	74	Qu. *Eliz.* dies at *Richmond*

King

King *James* began to Reign the 24 of *March*, 1602. but one day before 1603

Anno Dom	*A. Reg*	*Since*	King *James.*
1603	1	73	30578 die of the Pl. in *London*
1604	2	72	Peace with *Spain*
1605	3	71	Powder-Treason
1606	4	70	K. of *Denmark* came to *England*
1607	5	69	Moor-fields beautified
1608	6	68	Oath of Allegiance
1609	7	67	New Exchange in the *Strand*
1610	8	66	King of *France* murthered
1611	9	65	*Barthol. Legat* an *Arrian* burnt
1612	10	64	*P. Henry* dies, L. *Eliz.* married,
1613	11	63	Artillery Company revived
1614	12	62	*Middletons* Water
1615	13	61	*Smithfield* paved
1612	14	60	*Charles* created Pr. of *Wales*
1617	15	59	*Haidock* the sleeping Preacher
1618	16	58	Sir *Walter Rawleigh* decollated
1619	17	57	Queen *Anne* dies
1620	18	56	King of *Bohemia* overthrown
1621	19	55	*Ph.* 3 K. of *Spain* dies, *Ph.* 4 suc.
1622	20	54	Prince *Charles* goes into *Spain*
1623	21	53	*Black-Friers* downfal
1624	22	52	*Amboyna*'s bloody Cruelty.

King

King *Charles* began to Reign the 27 of *March*, 1625.

Anno Dom.	*A. R.*	*Since.*	King *Charles* I.
1625	1	51	54265 dye, of the Pl. 35417
1626	2	50	War with *Spain* and *France*
1627	3	49	Isle of *Rhees* Voyage
1628	4	48	Duke of *Buckingham* stabb'd
1629	5	47	*New England* planted
1630	6	46	K. *Chales* II. born, *May* 29
1631	7	45	Battle at *Lypsick*. *Tilly* slain
1632	8	44	*London* Bridge burnt
1633	9	43	*James* D. of *York* born *Octo.* 14
1634	10	42	Ship-money first taxed
1635	11	41	Old *Parr* dyed, aged 160.
1636	12	40	*Dutch* take *Spanish* silver fleet
1637	13	39	*English* Liturgy sent into *Scotl.*
1638	14	38	The *Scots* National Covenant
1639	15	37	*Dutch* beat the *Span.* at *Dover*
1640	16	36	The long Parl. begins, *Nov.* 3.
1641	17	35	Earl of *Strafford* beheaded
1642	18	34	*Edge-hill* Fight.
1643	19	33	*Newberry* first Fight
1644	20	32	*Newberry* second Fight
1645	21	31	Arch-B. *Canterbury* beheaded
1646	22	30	Lord *Fairfax* takes *Oxford*
1647	23	29	King taken by Parl. and Army
1648	24	28	King traiterously beheaded

King

K. *Charles* II began to Reign the 30 of *January*, 1648.

Anno Dom.	*A. R.*	*Since.*	King *Charles* II.
1649	1	27	Powder-blow in *Tower-street*
1650	2	26	K. *Ch.* II. crowned in *Scotland*
1651	3	25	*Worceſter* fight. *Love* beheaded
1652	4	24	Wars with *Holland*
1653	5	23	Old and New Parl. diſſolved
1654	6	22	Peace with *Holland*
1655	7	21	Wars with *Spain*
1656	8	20	2 Tides in 3 hours, *Octob.* 3
1657	9	19	*Mardike* taken by the *E.* & *Fr.*
1658	10	18	*Cromwel* dyed (the K.
1659	11	17	Sir *G. Booth*, and Gen. *Monk* for
1660	12	16	K *Charles* II joyfully reſtored
1661	13	15	K. Ch. II Crowned, *April* 23.
1662	14	14	Married to Queen *Katharine*
1663	15	13	King and Queen at *Windſor*
1664	16	12	3 Blazing-Stars ſeen
1665	17	11	97351 dye, of the Pl. 68586
1666	18	10	13200 houſes burnt in *London*
1667	19	9	The Dutch Hoſtile Treaty Ea. *Southampton* L. Treaſurer, the D. of *Camb.* & D. of *Kendal*, and the Famous *Abraham Cowley* dyed all this y. E. *Clar.* Baniſh'd. The foundation of the *Roy. Exch.* laid.

King

Anno Dom.	A. Re	Since	King Charles.
1668	20	8	L. *Fitz-Harding* Treas. of his Majesties Houshold, dyed. D. *Monmouth* made Capt. of his Majesties Guards.
1669	21	7	Pr. of *Tuscany* arrived in *Engl.* Q. Mo. of *Engl.* dyed this year. the Royal *Exchange* finished.
1670	22	6	Durch. of *Orleance* his Majesties Sister dyed, and the Prince of *Orange* arrived in *England.*
1671	23	5	Durch. of *York*, and E. of *Manchester* died.
1672	24	4	War Procl. with *Holland* by *Engl.* and *Fr.* and the 2 Fleets joyn against the *Dutch* Earl *Sandw.* slain at Sea. Duke of *Richm.* died Ambas. at *Denm.*
1673	25	3	Sr. *Tho. Osborn* created E. *Danby* & L. Treas. Sir *Edw. Spragg* slain at Sea. Sr *Henneage Finch* made Lord Keeper. Peace concluded with the *Dut.*
1674	26	2	His Majesty pleas'd to accept the freedom of the City.
1675	27	1	The founda. laid for the Cathedral of St. *Pauls London.*
1676	28	0	600 houses burnt in *Southwark* and the Monum. (where the great fire of *Lond.* beg.) finish'd.

A Constant
KALENDAR
OR,
An Almanack for 300 Years,

But more exactly serving for the next XIX Years, being the Circle of the Moon, or the Golden Number, beginning in the Year of our LORD, 1655.

By *H. P.*

London Printed 1677.

An Almanack for XIX *Years, according to the Englisb and Foreign Accounts*

Anno Dom	*Prim.*	*Epac.*	*Sund. Lett.*	*Shrove Sund.*	*Easter Sund.*	*Whit-Sunday*	*Dice.*
1656	4	14	F E	Feb.17	Apr. 6	May 25	0
1657	5	25	D	8	Mar.29	17	1
1658	6	6	C	21	Apr.11	30	0
1659	7	17	B	13	3	22	0
1660	8	28	A G	Mar.4.	22	June 10	5
1661	9	9	F	Feb24	14	2	1
1662	10	20	E	9	Mar 30	May 18	0
1663	11	1	D	Mar.1.	Apr.19	June 7	5
1664	12	12	C B	Feb21	10	May 29	1
1665	13	23	A	5	Mar.26	14	0
1666	14	4	G	25	Apr.15	Jun. 2	0
1667	15	15	F	17	7	May 26	1
1668	16	26	E D	2	Mar.22	10	0
1669	17	7	C	21	Apr.11	30	0
1670	18	18	B	13	3	22	1
1671	19	29	A	Mar.5.	23	Jun. 11	5
1672	1	11	G F	Feb18	7	May 26	0
1673	2	22	E	9	Mar.30	18	1
1674	3	3	D	Mar.1.	Apr.19	June 7	5

This Table ſhews, 1 the date of the years 2. The Prime or Golden Number. 3. The Epact. 4. The Dominical Letter for thoſe years. And then in their order the chief Moveable Feaſts, *viz.* Shrove Sunday, Eaſter day, and Whitſunday, upon which a th

the reſt depend. The Forreign account is commonly ten dayes, before us, but their Moveable Feaſts fall ſometimes at the ſame time with ours, ſometimes 1, 2, 3, 4, or 5 weeks before ours; as you may ſee in the laſt Column of the Table.

Of the Terms.

THere are 4 times of the year appointed for the determining of all cauſes, theſe are called terms. Two of theſe terms, *viz.* Hillary Term, and Michaelmas Term, are at a conſtant time of the year. But Eaſter Term, and Trinity Term, are ſooner or later, as thoſe Feaſts happen. Each of theſe Terms hath ſeveral Returns, and each Return hath four days belonging to it. The firſt is the day of *Return*, or *Eſſoyn* for the Defendant in a perſonal action, or the Tenant in a real action. The ſecond is the day of *Exception*, for the Plaintiffe, or Defendant, to lay an Exception. The third is the day whereon the Sheriff muſt return the Writ. The fourth is the day of *Appearance* in the Court. Theſe four dayes follow each other in order, except a Sunday, or Holy-day take up any of them, and then the day following ſerves for both occaſions.

The beginning and end of Hillary-Term and Michaelmaſs Term with all their Returns, you ſhall find in the following Kalender, which are conſtant if no Sunday hinder them.

Eaſter

Easter Term begins the Wednesday fortnight, or 17 dayes after Easter, and ends the Monday after Holy Thursday, or the Monday before Witsunday. It hath these five Returns.

Quind Pasch.	A fortnight	after Easter
Tres Paschæ	Three weeks	after Easter
Mense Paschæ	A Month	after Easter
Quinq; Paschæ	Five weeks	after Easter
Cras. Ascen.	The day after Holy-Thurs.	

Trinity Term begins the Friday after Trinity Sunday, which is the next to Whitsunday, and hath these four Returns.

Cras. Trin.	The Monday after Trin. S.
Oct. Trin.	A week after Trinity Sunday
Quind. Trin.	A fortnight after Trin Sun.
Tres Trin.	Three weeks after Trin. S.

The Exchequer opens 4 dayes before Trinity Term, but 8 dayes before the other Terms.

To reduce minutes into hours and quarters.

60 min. are an hour
52 min. or 53 min. three quarters and half.
45 min. are three quarters
37 or 38 min. half and half quarter
30 min. are half an hour.
22 or 23 min. quarter and half quarter.
15 min. are a quarter of an hour
7 or 8 min, half a quarter

Jan.

January 31					February 28				
1	a	29		Circ.	M	W	Moon		S. ☉ R.
2	b	28	0	4 1 8	D	D	Ep.	H.	H. M. H.
3	c	26	12	4 2 8	1	d	27		4 48 8
4	d	25	8	4 3 8	2	e	26	01	Hu. M.
5	e	23	21	4 4 8	3	f	25		Cr. Pur.
6	f	✱		Twelf.	4	g	23	10	Except
7	g	22	10	4 7 8	5	a	22	22	Ret.bre
8	a	21		4 8 8	6	b	21		Appear
9	b	20	6	☉ in ♒	7	c	20	18	4 59 8
10	c	18	18	4 11 8	8	d	19		☉ in ♓
11	d	✱		4 12 8	9	e	18	7	Oct.Pu.
12	e	17	15	4 14 8	10	f	✱		Except
13	f	16		Hillary	11	g	17	3	Ret.bre
14	g	15	3	4 17 8	12	a	15	16	T. End.
15	a	✱		4 18 8	13	b	✱		5 11 7
16	b	14	0	4 20 8	14	c	14	12	Valent.
17	c	12	12	4 21 8	15	d	13		5 14 7
18	d	5		4 23 8	16	e	12	1	5 16 7
19	e	11	01	☉ 10 ♒	17	f	11	14	5 18 7
20	f	9	0	Oct.hill	18	g	9	10	☉ 10 ♓
21	g	7	10	Except	19	a	8		5 22 7
22	a	✱		Ret.bre	20	b	7	0	5 24 7
23	b	6	6	T. Beg.	21	c	6	19	5 26 7
24	c	4	18	4 33 8	22	d	5		5 28 7
25	d	✱		Co.Paul	23	e	4	7	5 30 7
26	e	3	7	4 37 8	24	f	3	20	Matt.
27	f	2		Qu.hill.	25	g	2		5 34 7
28	g	1	3	Except	26	a	1	16	5 36 7
29	a	✱		Ret.bre	27	b	✱		5 38 7
30	b	29	16	Appear	28	c	29	5	☉ 20 ♓
31	c	28	12	4 36 8					

March 31							April 30							
1	d	28	1	David.			M	W	Ep.	H.		S. ☉		R.
2	e	26	14	5	44	7	1	g	26	2		6	44	6
3	f	✶		5	46	7	2	a	25	22		6	46	6
4	g	25	10	5	48	7	3	b	24	0		6	48	6
5	a	24		5	50	7	4	c	23	11		6	50	6
6	b	23	c	5	52	7	5	d	✶			6	52	6
7	c	22	11	5	54	7	6	e	22	0		6	54	6
8	d	21		5	56	7	7	f	20	20		6	56	6
9	e	20	7	5	58	7	8	g	19			6	57	6
10	f	18	20	☉	in ♈		9	a	18	9		6	59	6
11	g	✶		6	2	6	10	b	✶			☉	in ♉	
12	a	17	16	6	4	6	11	c	17	5		7	2	5
13	b	16		6	6	6	12	d	15	6		7	4	5
14	c	15	5	6	8	6	13	e	14	14		7	6	5
15	d	14	1	6	10	6	14	f	13			7	8	5
16	e	12	14	6	12	6	15	g	12	2		7	10	5
17	f	✶		6	14	6	16	a	11	15		7	11	5
18	g	11	2	6	16	6	17	b	10			7	13	5
19	a	10		6	18	6	18	c	9	11		7	15	5
20	b	9	0	☉	10 ♈		19	d	8			7	17	5
21	c	7	11	6	22	6	20	e	7	0		☉	10 ♉	
22	d	✶		6	24	6	21	f	6	20		7	19	5
23	e	6	7	6	26	6	22	g	5			7	22	5
24	f	4	20	6	28	6	23	a	4	9		George.		
25	g	✶		An. M.			24	b	3	21		7	25	5
26	a	3	8	6	32	6	25	c	2			Mark.		
27	b	2		6	34	6	26	d	1	18		7	29	5
28	c	1	7	6	36	6	27	e	✶			7	31	5
29	d	29	17	6	38	6	28	f	29	6		7	32	5
30	e	28	14	☉	20 ♈		29	g	28	2		7	34	5
31	f	27		6	42	6	30	a	27			☉	20 ♉	

May 31							June 30						
				Ph.	Ja.		M.	W	Ep.	H.	S.	☉	R.
1	b	✶		7	39	5	1	e	25	0	☉	20	♊
2	c	25	11	7	40	5	2	f	23	13	8	11	4
3	d	24		7	42	5	3	g	✶		8	11	4
4	e	23	0	7	44	5	4	a	22	1	8	12	4
5	f	22	13	7	45	5	5	b	20	21	8	12	4
6	g	21		7	46	5	6	c	19		8	12	4
7	a	20	9	7	47	5	7	d	18	10	8	13	4
8	b	18	21	7	49	5	8	e	✶		8	13	4
9	c	✶		7	50	5	9	f	17	6	days at		
10	d	17	18	☉	in	♊	10	g	15	19	a ſtand		
11	e	16	0	7	53	5	11	a	14	15	☉ in		♋
12	f	15	6	7	54	5	12	b	13		dayes		
13	g	14	2	7	55	5	13	c	12	4	ſhorten		
14	a	12	15	7	56	5	14	d	11	16	8	13	4
15	b	✶		7	57	5	15	e	10		8	13	4
16	c	11	4	7	58	5	16	f	9	13	8	12	4
17	d	10		7	59	5	17	g	8		8	12	4
18	e	9	0	8	0	4	18	a	7	1	8	12	4
19	f	7	13	8	1	4	19	b	6	21	8	11	4
20	g	✶		8	1	4	20	c	5		8	11	4
21	a	6	9	☉	10	♊	21	d	4	10	8	11	4
22	b	4	1	8	3	4	22	e	✶		☉	10	♋
23	c	✶		8	4	4	23	f	3	0	8	10	4
24	d	3	10	8	5	4	24	g	1	19	*John B.*		
25	e	2		8	6	4	25	a	✶		8	8	4
26	f	1	6	8	7	4	26	b	29	6	8	8	5
27	g	9	19	8	8	4	27	c	28	4	8	7	4
28	a	28	15	8	8	4	28	d	26	17	8	6	4
29	b	27		8	9	4	29	e	✶		*Per. A.*		
30	c	26	4	8	10	4	30	f	25	13	8	4	4
31	d	✶		8	10	4							

		July 31					*August* 31				
1	g	24		8	3	4	1	c	✶		Lamas.
2	a	23	1	☉ 20 ♋			2	d	22	3	7 19 5
3	b	22	14	8	2	4	3	e	21	0	☉ 20 ♌
4	c	21		8	1	4	4	f	20	0	7 16 5
5	d	20	10	8	0	4	5	g	18	12	7 14 5
6	e	19		7	58	5	6	a	✶		7 12 5
7	f	18	0	7	57	5	7	b	17	8	7 10 5
8	g	17	19	7	56	5	8	c	15	20	7 8 5
9	a	16		7	55	5	9	d	14	17	7 7 5
10	b	15	8	7	54	5	10	e	13		Lauren.
11	c	14	4	7	53	5	11	f	12	5	7 3 5
12	d	12	17	7	52	5	12	g	11	18	7 1 5
13	e	✶		☉ in ♌			13	a	10		☉ in ♍
14	f	11	5	7	49	5	14	b	9	14	6 58 6
15	g	10		Swith.			15	c	8		6 56 6
16	a	9	1	7	46	5	16	d	7	3	6 54 6
17	b	7	14	7	45	5	17	e	✶		6 52 6
18	c	✶		7	43	5	18	f	6	0	6 50 6
19	d	6	10	Do.d.b.			19	g	4	12	6 48 6
20	e	5		7	40	5	20	a	✶		6 46 6
21	f	4	0	7	39	5	21	b	3	0	6 44 6
22	g	3	11	Magda.			22	c	1	20	6 42 6
23	a	2		☉ 10 ♌			23	d	✶		☉ 10 ♍
24	b	1	8	7	34	5	24	e	29	9	*Barthol.*
25	c	29	20	*Ja. Ap.*			25	f	28	5	6 36 6
26	d	28	14	7	0	5	26	g	26	18	6 34 6
27	e	27		7	29	5	27	a	✶		6 32 6
28	f	26	5	7	27	5	28	b	25	14	Do.d.e.
29	g	✶		7	25	5	29	c	24		6 29 6
30	a	25	1	7	24	5	30	d	23	3	6 27 6
31	b	23	14	7	22	5	31	e	22	15	6 25 6

September 30					October 31				
M.W	Ep. H.		S. ☉R.						
1 f	21		Giles.		1 a	21		5 24	7
2 g	20	12	6 21	6	2 b	20	0	5 22	7
3 a	19		☉20♍		3 c	18	13	☉20♎	
4 b	18	0	6 17	6	4 d	✶		5 18	7
5 c	17	20	6 15	6	5 e	17	9	5 16	7
6 d	16		6 13	6	6 f	15	22	5 14	7
7 e	15	9	6 12	6	7 g	14	18	5 12	7
8 f	14	6	La. fair		8 a	13		5 10	7
9 g	12	18	6 7	6	9 b	12	7	5 8	7
10 a	✶		6 5	6	10 c	11	19	5 6	7
11 b	11	7	6 3	6	11 d	10		5 4	7
12 c	10		6 1	6	12 e	9	16	5 2	7
13 d	9	3	☉in ♎		13 f	8		☉in ♏	
14 e	7	16	5 57	7	14 g	7	4	4 59	8
15 f	✶		5 55	7	15 a	✶		4 57	8
16 g	6	12	5 53	7	16 b	6	0	4 55	8
17 a	5		5 51	7	17 c	4	13	4 53	8
18 b	4	0	5 49	7	18 d	✶		*Luke*	
19 c	3	13	5 47	7	19 e	3	1	4 49	8
20 d	2		5 45	7	20 f	2		Tres M.	
21 e	1	9	*Matth.*		21 g	1	0	Except	
22 f	29	22	5 42	7	22 a	29	11	Ret.bre	
23 g	28	18	☉10♎		23 b	28	7	*I. Beg*	
24 a	27		5 38	7	24 c	26	19	4 40	8
25 b	26	17	5 36	7	25 d	✶		Crispin	
26 c	✶		5 34	7	26 e	25	16	☉13♏	
27 d	25	3	5 32	7	27 f	24		Me. Mi.	
28 e	23	16	5 30	7	28 g	23	4	*Si. Ju.*	
29 f	✶		*Michael*		29 a	22	17	Ret.bre	
30 g	22	45	5 26	7	30 b	21		Appear	
					31 c	20	13	4 28	8

	Novemb. 30				December, 31						
h		Ep. H		S. ☉ R.	1	f	18	15	☉ 20 ♐		
1	l	19		All Soul	2	g	✶		3	50	9
2	:	18	2	*All Sts.*	3	a	17	11	3	49	9
3		✶		Craſt.A	4	b	15	23	3	48	9
4	3	17	0	Except	5	c	14	20	3	48	9
5	l	15	11	*Pow.tr.*	6	d	13		3	48	9
6	)	14	7	Appear	7	e	12	8	3	47	9
7	:	12	19	4 16 8	8	f	11	21	dayes		
8	l	✶		☉ 25 ♍	9	g	10		are at a		
9	e	11	8	4 15 8	10	a	9	17	ſtand		
10	f	9		4 13 8	11	b	8		☉ in ♍		
11	g	8	4	Martin.	12	c	7	6	dayes		
12	a	7	17	Cra. M.	13	d	✶		increaſ		
13	b	✶		Except	14	e	6	2	3	47	9
14	c	6	13	Ret.bre	15	f	4	15	3	47	9
15	d	5		Appear	16	g	✶		3	48	9
16	e	4	2	☉ 49 ♐	17	a	3	3	3	48	9
17	f	3	14	4 3 8	18	b	2		3	49	9
18	g	2		Oct. M.	19	c	1	0	3	49	9
19	a	1	11	Except	20	d	29	12	☉ 09 ♑		
20	b	29	23	Ret.bre	21	e	28	8	*Tho.*		9
21	c	28	20	Appear	22	f	27		3	50	9
22	d	27		☉ 10 ♐	23	g	26	0	3	51	9
23	e	26	8	3 56 9	24	a	25	17	3	52	9
24	f	✶		3 55 9	25	b	24		*Ch. N.*		
25	g	25	4	Qu.Ma.	26	c	23	6	*Stephen*		
26	a	23	17	Except	27	d	22	18	*John*		
27	b	✶		Ret.bre	28	e	21		*Inno.*		
28	c	22	6	*T. End.*	29	f	20	15	3	56	9
29	d	21		3 51 9	30	g	19		3	57	9
30	e	20	2	*Andr.*	31	a	18	3	3	58	9

The Deſcription and uſe of this conſtant Kalender.

EAch Month hath four Columns; The firſt whereof ſhews the dayes of the Moneth. The ſecond Column having the Dominical Letters, ſhews the dayes of the Week. The third Columne having two rows of Figures, the firſt of them ſhews the Epact of the Moon, to find out the day of the change, and the Age of the Moon; and the other the hour of the day, reckoning the ſaid hours alwayes from Noon. The fourth Column ſhews the cheif days of the Year, and the Terms and their Returns which are fixed and certain. And in the void places it ſhews the riſing and ſetting of the Sun at *London*, and the place of the Sun every tenth day or degree. Theſe four Columns are of themſelves ſufficient for mens ordinary uſe, and may with a little art and pains be made to perform all the concluſions which the yearly Almanacks ſhew and teach, As you ſhall ſee by theſe brief Rules and Obſervations.

1. *To know the day of the Month.*

This is the chief and moſt uſeful obſer-

vation of any Almanack, and may as well be perform'd by this as by any other: to this purpoſe you muſt firſt by the general Kal. at the beginning hereof know the Dominical or Sunday Letter for the year; then conſidering with your ſelf whether it be the beginning, midſt, or end of the Moneth (as you muſt do in any Almanack) find this letter in the beginning, or midſt, or end of the Moneth, and reckoning from it to the day of the week, either Munday, Tueſday, or whatſoever other day it is, right againſt the day of the Week, you ſhall find what day of the Moneth it is.

Here is no difficulty in this, only when it is Leap-year, and then you ſee there are two Sunday-Letters, the firſt of theſe you muſt uſe only to the 24. of *Feb.* and the other all the year after.

Thus this preſent year 1656 the Dominical Letters being *F* and *E*; the firſt Sunday in *January* is at the firſt *F*, which is at the 6 day of the Month. The firſt Sunday in *Febr.* is at the firſt *F*, which is the third day of the Moneth. But the firſt Sunday in *March*, is at the firſt *E*, which is the ſecond day of the Moneth. And ſo all the year after.

2. *To know what day of the Week any notable Day will fall upon, in any Year.*

First, find the Dominical Letter in the former Table, then find this Letter in your Moneth, next before the day you desire, and so from thence count the dayes of the Week, till you come to the day desired.

Thus, if you would know what day of the week *Lady Day*, or the *Annunciation* of the *Lady Mary* falls upon this year 1656. The Dominical Letter is *E*, this is two dayes before the said day; therefore that falls upon a Tuesday.

But now in the year 1659, when the Dominical Letter is *B*, *Lady day* will be upon the Friday. This will be in a short time as ready to you, as if these Letters were painted out for you in Vermilion.

3. *To find the time of the Suns Rising and Setting.*

This is set down for most of the Dayes in the whole year for *London*, and may serve for all the East, South, and West parts of *England*. And this I have done after somewhat a briefer manner than is usual, making the minutes which are placed in the midst, to serve both the hours of setting

and rising, which you must understand thus, The 22 of *January* you shall find these figures, 4, 30, 8. That is, the Sun that day sets at 4, 30, or half an hour past four of the clock, and riseth at 30. 8. or half an hour before 8 of the Clock. And so you must account them alwayes, remembring that as the minutes follow the first figure, so they must be reckoned after it in time, and as they stand before the last figure, so they are to be reckoned before it in time.

And here think it not preposterous, that I have set down the time of Sun-setting before the Rising, for the Sun-setting is of most use (as you shall see anon) and the other serves in a manner but for the handsomer filling up of the Column.

	h.	*m.*
If you double this time of Sun setting	4	30
You have the length of the day	9	0
If you substract it from	12	0
You have the time of Suns Rising, differing in shew from the Kalender but alt one in effect, and this doubled shews the length of the night.	7	30
	15	0

4 *To find the place of the Sun.*

This is set down in the Kalender about every tenth day, to every tenth degree, so that

that reckoning a degree for each day between, you ſhall have the place of the Sun exact enough for moſt ordinary uſes.

Thus the tenth of *March*, the Sun enters into *Aries*, and therefore the 15 day or five dayes after, the Sun is in five degrees of *Aries*.

5. *To find the day and hour of the Change or New-Moon, and thereby the Full and Quarters.*

Firſt, you muſt finde the Moons *Epact* for the preſent Year you are in. This *Epact* number is found out by the Golden Number, I ſhall not now ſhew how, but only have ſet it down in the General Table, at the beginning of the Kalender. And though this might be found out by the *Golden Number*, yet that would ſtand ſo ſcattering and without form, that it is much handſomer and readier to find out by this *Epact*, which runs for the moſt part in a conſtant order, only here and there ſkipping a day or a number, which is marked with this ✳.

Having found out the Epact for the preſent year, turn to the Month you deſire, and there find out the ſaid Number of the *Epact*, in the third Columne of the Month, and

and mark what day of the moneth it ſtands againſt, for that is the day of the Change, or New Moon: likewiſe if you have reſpect to the Dominical Letter which is by it, you ſhall ſee what day of the week it is.

Now here in this Column there are two rowes of figures, the firſt ſhews the *Epact* Number, and the next the time of the day, reckoned by the hours from noon, which are plain to underſtand till you come to 12 hours after noon, which is midnight: but then the numbers above 12 you muſt reckon to the morning of the next day.

So that theſe hours afternoon

13 14 15 16 17 18 19 20 21 22 23 24

1 2 3 4 5 6 7 8 9 10 11 12

Are all one with theſe the next day in the morning.

Thus in the year 1657. the *Epact* being 25, and the Dominical Letter *D*, you ſhall find this *Epact* number 25 againſt the 4th. of *January*, being Sunday, and the figure of 8 ſtanding by it, ſhews that it is about 8 hours after noon, and this is the time of the New Moon.

Again, you ſhall find this *Epact* number 25 againſt the 3d. of *February*, being Tueſday, and the (o) ſtanding by it ſhews it is juſt noon.

Again,

Again, you ſhall find this number 25 againſt the 4th of *March*, at 10 hours afternoon. And alſo againſt the 2d. of *April* at 22 hours afternoon, that is, at 10 of the clock the next day in the forenoon. And ſo for the reſt of the Moneths, or for any other *Epact* any other year.

Now this is the true time of the New Moon, according to the Moons mean motion; which though it may differ half a day from the true change, yet it ſeldom differs ſo much, and is better for the following concluſions than the true time.

Having thus found the time of the New Moon, you may from thence reckon the age of the Moon, and ſo find the quarters or full Moon.

Thus the Moons age is	*dayes,*	*hou.*	*min.*
At the firſt quarter	7	9	11
At the full Moon	14	18	22
At the laſt quarter	22	3	33
At whole Moon	29	12	44

Or elſe obſerve the Dominical Letter that is againſt the *Epact* or day of the New Moon, and where you find that Letter again, that is the firſt quarter. For the full Moon take two weeks and one day, which will fall upon the letter next to it. For the laſt quarter take one week more, which will fall

fall upon the letter of the full Moon. Thus if the New Moon fall on A, the first quarter falls on the next A. The full Moon a week after on the next B. And the last quarter on the next B.

And thus you have this brief Kalender or constant Almanack for many years; only for the more exactness in the hour of the Moons change and Age, I restrain it to 19 years. For though the change of the Moon (for the most part) happens again upon the same dayes for several revolutions of the Prime, or Golden Number xix: yet not upon the same hour of the day, but alters every revolution 7 hours, 27 minutes, 30 seconds, proceeding forward for the most part: but the Leap-years coming in with a day more than ordinary, keeps this motion so much backward, that in 300 years it neither gains nor loseth a day, only differs in the hour of the day, Yet for the more exactness it will be better to renue this every xix years.

All these things this brief Kalender plainly shews you, with little or no trouble more than in a yearly Almanack. I shall now proceed to some other conclusions which depend upon these, but are not so plainly expressed in the Kalender; and therefore require a little more pains and consideration.

6. To

6. *To finde the time of the Moons Southing, and the time of the Tydes any day.*

Moons Age D. D.	Moon South H. M.	Tide London H. M.
☌ ☍	12 0	3 0
1 16	12 48	3 48
2 17	1 36	4 36
3 18	2 24	5 24
4 19	3 12	6 12
5 20	4 0	7 0
6 21	4 48	7 48
7 22	5 36	8 36
8 23	6 24	9 24
9 24	7 12	10 12
10 25	8 0	11 0
11 26	8 48	11 48
12 27	9 36	12 36
13 28	10 24	1 24
14 29	11 12	2 12

Having the Age of the Moon by the former rule, find the said Age in this Table, and in that line you have the Moons coming to the South.

Thus the Moon being either 5 dayes or 20 dayes old, the Moon is South at 4 of the clock.

Now upon this depends the time of the Tydes, as you may partly see by this Table, for when it is New or Full Moon, it is observed that it is high Tide at *London*, at 3 of the clock: and so for any other day adde three hours to the time of the Moons Southing, and you have the time of high Tides at *London*.

The like you may do for any other place, which you may write down in a Table, (if you have occasion for one place very much)

or

or else, only adde the time set to these places, to the time of the Moons coming to the South, and so you have the time of high tide in any of these places, only take notice that the Neap Tides, which are about the quarters of the Moon will fall an hour or more, sooner.

A Tide Table.	h.	m.
Quinborow, Southam. Portsmouth, S.	0	0
Rochester, Malden, Blacktail. S. by W.	0	45
Gravesend, Downs, Blackness, Scilly, S S w.	1	30
Dundee, S. Andrews, Lisbon, Lucas, S W by S.	2	15
London, Tinmouth, Amsterdam, Rotterdam, S. W.	3	0
Barwick, Flushing, Flamborough, S W by W.	3	45
Baltamoor, Cork, Severn, Calice, W S W.	4	30
Falmouth, Humber, Newcastle, W by S.	5	15
Plimouth, Hull, Lin, S. Davids, W & E.	6	0
Bristol, Start-point, Waterford, E by S.	6	45
Milford, Bridgwater, Landsend, E S E	7	30
Portland, Hartflew, Dublin, S E by E.	8	15
Pool, Man-Isles, Dunbar, Diep, S E.	9	0
Needles, Orford, South and North forlands, S E by S.	9	45
Yarmouth, Dover Harwich, S S E.	10	30
Rie, Witchelsey, Culsher, S by E.	11	15

7. *To find the time of the night, by the Moon ſhining upon a Sun-Dial*

Having the age of the Moon, and ſo the time of the Moons coming to the South by the former Table, adde about a quarter or half an hour thereunto, as it is more early or late in the night, and adde this Southing of the Moon, and the ſhadow of the Moon upon the Dial together, and that is the time of the Night. If the ſumme exceed 12 hours, take only the overplus.

Thus the Moon being about 9 days old at Noon, will be 9 dayes and an half at Night, and ſo is ſouth about. 7 h. 30 m.

Now ſuppoſe the ſhadow to be upon the Dial at 3 0

These two added together, ſhew the time of the Night 10 30

8. *To find what Sign the Moon is in.*

Aſtronomers divide the Compaſs of the Heavens into 12 Signes, which they ſet forth by theſe names and characters, which you muſt be a little acquainted with.

Aries

Aries, Taurus, Gemini, Cancer, Leo, Virgo,

♈ 1 ♉ 2 ♊ 3 ♋ 4 ♌ 5 ♍ 6

Libra, Scorpio, Sagittar. Capric. Aquar. Piſces.

♎ 7 ♏ 8 ♐ 9 ♑ 10 ♒ 11 ♓ 12

The Sun runs through theſe 12 Signes, but once in a year, the Moon in leſs than a month, *viz.* in 27 dayes, 7 hours, 43 min.

A Table shewing the motion of the Moon according to her age.

D.	Age.	S.	D.	M.
	1	0	13	11
	2	0	26	21
	3	1	9	32
	4	1	22	42
	5	2	5	53
	6	2	19	4
	7	3	2	14
	8	3	15	26
	9	3	28	35
	10	4	11	46
	11	4	24	56
	12	5	8	7
	13	5	21	18
	14	6	4	28
	15	6	17	39
	16	7	0	49
	17	7	14	0
	18	7	27	11
	19	8	10	21
	20	8	23	32
	21	9	6	42
	22	9	19	53
	23	10	3	3
	24	10	16	14
	25	10	29	25
	26	11	12	35
	27	11	25	46
	28	12	8	56
	29	12	22	7
	30	13	5	17

Now every New Moon, the Sun and Moon are both in one Signe and Degree, but the Moon hath a motion of about 13 Degrees every day, as is shewed in this Table; therefore according to the age of the Moon, adde the Signes and Degrees of the Moons motion, to the place of the Sun at the New Moon, and so you shall have the Sign and Degree which the Moon is in at any time desired.

Thus in the year 1656, it being New Moon the 14 of *April*, the Sun and Moon are then both in five Degrees of *Taurus*, now upon the 24 of *April*, the Moon being 10 dayesold, I would know what Signe the Moon is in.

This

This Table shews that for the 10 dayes motion, you must adde 4s. 12d. to the said 5 deg. of ♉

Now counting these 4 signes upon your fingers, reckoning the names of the Signes in order from *Taurus*, ♊ 1, ♋ 2, ♌ 3, ♍ 4. it falls upon the Sign *Virgo*. Lastly, adding the odde 5 deg. of the Suns place, and the 12 degree of the *Moons* motion together, it shews the place of the *Moon* to be in 17 degrees of *Virgo*.

Some make much use of the *Moons* being in such and such Signs, both in Physick and Husbandry, of which I shall say nothing, but only give you one conclusion which must depend hereon, and that is,

9. *To know the time of the Moons rising and setting.*

Some reckon the Southing of the *Moon* after the Sun, to be equal with the setting of the new *Moon* after the Sun-set, and with the rising of the *full Moon* after the Sun-set. But this is seldom true, for many times the *Moon* riseth 4 or 5 nights within an hours time.

Therefore to know this, having found the place of the *Moon*, or what Sign the *Moon* is in, seek out in the *Kalendar* at what

what time the Sun is in this Sign and Degree, and there you ſhall find the true time of Sun-ſetting being in that place. This is half the continuance of the *Sun* or *Moon* above the *Horizon* in that Sign and Degree, this added to the time of the *Moons* coming to the South, ſhews the time of her ſetting, and ſubſtracted from it, ſhews the time of her riſing.

Thus upon the 24 of *April* the *Moon* being 10 dayes old, and in the 17 deg. of *Virgo*, it is deſired to know the time of the *Moons* riſing and ſetting.

	h.	m.
Firſt, the Moon being 10 *dayes old is South about*	08	00
Secondly, the Sun is in this ſign and degree about the 30 *of* Auguſt, *and then ſets at*	6	27
This ſubſtracted, ſhews the riſing in the afternoon.	1	33
And added ſhews the time of ſetting	14	17
Which caſting 12 *away, is morning*	2	27

In all theſe Queſtions there ought to be ſome allowance, for the time afternoon; but the *Moons motion* being not alwayes equal, this allowance may ſometimes make the work better, ſometimes worſe; therefore I ſhall not trouble you therewith, but count this ſufficient for this ſtanding and general Kalender.

A Table of Intereſt at 8 per Cent.

		1 Moneth.				2 Moneths.				3 Moneths.			
		li.	ſh.	d	c.	li.	ſh.	d.	c.	li.	ſh.	d	c.
Shill.	5	0	0	0	40	0	0	0	80	0	0	1	20
	10	0	0	0	80	0	0	1	60	0	0	2	40
	15	0	0	1	20	0	0	2	40	0	0	3	60
Pounds.	1	0	0	1	60	0	0	3	20	0	0	4	80
	2	0	0	3	20	0	0	6	40	0	0	9	60
	3	0	0	4	80	0	0	9	60	0	1	2	40
	4	0	0	6	40	0	1	0	80	0	1	7	20
	5	0	0	8	00	0	1	4	00	0	2	0	00
	6	0	0	9	60	0	1	7	20	0	2	4	80
	7	0	0	11	20	0	1	10	40	0	2	9	60
	8	0	1	0	80	0	2	1	60	0	3	2	40
	9	0	1	2	40	0	2	4	80	0	3	7	20
Pounds.	1	0	1	4	0	0	2	8	0	0	4	0	0
	20	0	2	8	0	0	5	4	0	0	8	0	0
	30	0	4	0	0	0	8	0	0	0	12	0	0
	40	0	5	4	0	0	10	8	0	0	16	0	0
	50	0	6	8	0	0	13	4	0	1	0	0	0
	60	0	8	0	0	0	16	0	0	1	4	0	0
	70	0	9	4	0	0	18	8	0	1	8	0	0
	80	0	10	8	0	0	1	4	0	1	12	0	0
	90	0	12	0	0	0	4	0	0	1	16	0	0
Pounds.	100	0	13	4	0	1	6	8	0	2	0	0	0
	200	1	6	8	0	2	13	4	0	4	0	0	0
	300	2	0	0	0	4	0	0	0	6	0	0	0
	400	2	13	4	0	5	6	8	0	8	0	0	0
	500	3	6	8	0	6	13	4	0	10	0	0	0
	600	4	0	0	0	8	0	0	0	12	0	0	0
	700	4	13	4	0	9	6	8	0	14	0	0	0
	800	5	6	8	0	10	13	4	0	16	0	0	0
	900	6	0	0	0	12	0	0	0	18	0	0	0
	1000	6	13	4	0	13	6	8	0	20	0	0	0

A Table of Interest at 8 per Cent.

		6 Moneths				9 Moneths				12 Months			
		li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill.	5	0	0	2	40	0	0	3	60	0	0	4	80
	10	0	0	4	80	0	0	7	20	0	0	9	60
	15	0	0	7	20	0	1	10	80	0	0	2	40
Pounds.	1	0	0	9	60	0	1	2	40	0	1	7	20
	2	0	1	7	20	0	2	4	80	0	3	2	40
	3	0	2	4	80	0	3	7	20	0	4	9	60
	4	0	3	2	40	0	4	9	60	0	6	4	80
	5	0	4	0	00	0	6	0	00	0	8	0	00
	6	0	4	9	60	0	7	2	40	0	9	7	20
	7	0	5	7	20	0	8	4	80	0	11	2	40
	8	0	6	4	80	0	9	7	20	0	12	9	60
	9	0	7	2	40	0	10	9	60	0	14	4	80
Pounds.	10	0	8	0	0	0	12	0	0	0	16	0	0
	20	0	16	0	0	1	4	0	0	1	12	0	0
	30	1	4	0	0	1	16	0	0	2	8	0	0
	40	1	12	0	0	2	8	0	0	3	4	0	0
	50	2	0	0	0	3	0	0	0	4	00	0	0
	60	2	8	0	0	3	12	0	0	4	16	0	0
	70	2	16	0	0	4	4	0	0	5	12	0	0
	80	3	4	0	0	4	16	0	0	6	8	0	0
	90	3	12	0	0	5	8	0	0	7	4	0	0
Pounds.	100	4	0	0	0	6	0	0	0	8	0	0	0
	200	8	0	0	0	12	0	0	0	16	0	0	0
	300	12	0	0	0	18	0	0	0	24	0	0	0
	400	16	0	0	0	24	0	0	0	32	0	0	0
	500	20	0	0	0	30	0	0	0	40	0	0	0
	600	24	0	0	0	36	0	0	0	48	0	0	0
	700	28	0	0	0	42	0	0	0	56	0	0	0
	800	32	0	0	0	48	0	0	0	64	0	0	0
	900	36	0	0	0	54	0	0	0	72	0	0	0
	1000	40	0	0	0	60	0	0	0	80	0	0	0

A Catalogue of all the Shires, Cities, and Bishopricks, Market-Towns, Parishes & Parks, in England *&* Wales.

	Shires.	Cities and Bishopricks.	Market Towns.	Parishes	Parks
1	Barkshire		12	140	013
2	Bedfordsh.		10	116	012
3	Buckingh.		11	185	015
4	Cambridg	Ely	8	163	005
5	Cheshire	Chester	13	68	018
6	Cornwal		22	161	009
7	Cumberl.	Carlisle	9	58	008
8	Darbishire		8	106	034
9	Devonsh.	Exeter	37	394	023
10	Dorcetsh.		18	248	012
11	Durham	Durham	6	118	021
12	Essex		21	415	046
13	Glocester.	Glocester	20	280	019
14	Hampshire	Winchest	21	289	022
15	Hartfordsh.		18	120	023
16	Herefordsh	Hereford	8	176	008
17	Huntingto.		6	79	007
18	Kent	Canterbury Rochester	17	389	023
19	Lancashire		15	36	030
20	Leicestersh		12	200	013
21	Lincolnsh.	Lincoln	26	630	013
22	Middlesex	London Westminster	4	186	004
23	Northamp	Peterbor.	10	326	023
24	Nottingh.		8	168	018
25	Northumb.		11	168	008

Shires.	Cities and Bishopr.	Marke Towns	Parishes	Parks
26 Norfolk	Norwich	26	606	000
27 Oxford	Oxford.	10	280	005
28 Rutland		2	48	004
29 Shropshire		14	170	027
30 Somerset.	Bath. wells	33	385	018
31 Stafford	Briſtol	13	130	038
32 Suffolk	Lichfield Coventry.	28	575	027
33 Surry		9	140	017
34 Suſſex	Chicheſt	18	312	033
35 Warwikſh.		15	158	016
36 Weſtmorl.		4	26	019
37 Wiltſhire	Salisbury	19	304	029
38 Worceſter	Worceſt	10	152	016
39 Yorkſhire	York	46	563	072
40 Angleſey		2	74	000
41 Brecknock		3	61	002
42 Cardigan		4	64	000
43 Carmarth.		6	87	002
44 Carnarv.		5	68	000
45 Denbyſh.		3	57	006
46 Flintſhire	Bangor	1	28	002
47 Glamorg.		7	118	005
48 Montgom.	St. Aſaph	6	47	000
49 Monmout.		6	127	008
50 Merioneth.		3	27	000
51 Pembrook	S. Davids	6	145	003
52 Radnorſh.		4	52	000
Shires 52	25, 26	654	9725	781

Of the Reduction of Weights of several Places.

One pound Avoir-du-poiz weight at Lon. *makes at these several places.*		*One pound weight in any of these places makes at* Lon. *Avoir-du.*
li. parts.		*li. parts.*
0,9615	Antwerp	1,04
0,9	Amsterdam	1,1111
0,91	Abbeville	1,0989
1,282	Ancona	0,78
1,12	Avignon	0,8928
0,91	Burdeaux	1,0989
0,91	Burgoine	1,0989
1,25	Bollonio	0,8
0,98	Bridges	1,02
1,3698	Callabria	0,73
1,07	Callais	0,9345
0,8474	Constantinople	1,1816
0,91	Diep	1,0989
1,16	Dantzick	0,862
1,3333	Ferrara	0,75
1,288	Florence	0,78
1,06	Flanders, *all*	1,9433
0,9345	Geneva	0,07
1,4084	Genoa *subtle*	0,71
1,4285	Genoa *Grofs*	0,7

One li. Avoir-du-poiz weight at London *makes at theſe ſeveral places.*		*One li. at any of theſe places makes a* Lond. *of Avoir-du poiz weight.*
li. parts		*li. parts.*
0,92	Hamburg	1,0865
0,95	Holland	1,0526
0,881	Lyxborne	1,135
1,07	Lyons common	0,9345
0,98	*Silk weight*	1,0204
0,9	*Cuſtomers wt.*	1,1111
1,3333	Leighorn	0,75
1,4285	Millan	0,7
1,333 3	Mirandola	0,75
0,88	Norimberg	1,2363
1,4084	Naples	0,71
0,89	Paris	1,1235
0,83	Prague	1,2048
1,3888	Placentia	0,72
1,12	Rochel	0,8928
1,27	Rome	0,7874
0,875	Rovan *vicont*	1,1428
0,9017	*common wt.*	1,1089
1,08	Sivil	0,9259
1,12	Tholouſa	0,8928
1,2195	Turen	0,82
1,5625	Venice *ſubtle*	0,64
0,9433	*groſs*	1,06
0,813	Vienna	1,23

A Table for the Reduction of the Measures of several places.

One Ell at Lon. *makes at these several places, Ells, Aulnes, Braces, or, &c.*		*One Ell, Auln, Brace &c. at these places, makes at* London.
parts.		*Ells. parts.*
1,6949	Amsterdam	0,59
1,6666	Antwerp	0,6
1,64	Bridges	0,6097
1,65	Arras	0,606
1,74	Norimberg	0,5747
2,08	Colen	0,4807
1,66	Lisle	0,6024
1,57	Mastrich	0,6369
2,0866	Frankford	0,4792
13,833	Dantzick	0,7228
1,45	Vienna	0,6896
	Ells.	
0,95	Paris	1,0526
1,03	Rovan	0,9708
1,0166	Lyons	0,9836
1,57	Callais	0,6369
	Aulnes.	
1,8	Venice, *linnen*	0,5555
1,96	Lucques, *Silk*	0,5102
2,0		0,5
2,4	Florence	0,4901
2,3	Millan	0,4347
2,0	Leghorn	0,5
1,0328	Madera's	0,9681
	Braces.	

One Ell at London, *makes at any of these places, Ells, Auln, &c.*		*One Ell, Auln, Brace, &c. at any of these places, makes at* London.
o *parts.*		*Ells. parts.*
1,35	Sivil	0,7407
1,	Lisbone	1,
1,3875	Castiile *Vares*	0,7207
1,3625	Andaluzia	0,7339
1,3625	Granado	0,7339
4,883	Genoa *Palms*	0,2079
0,55	Siragose	1,1881
0,56	Rome *Canes*	1,7857
0,7125	Barselona	1,4035
1.2125	Valentia	0,8247

The manner of using these Tables is after this manner, in such questions as these.

If one pound Avoir-du-poiz at *London*, doth make at *Amsterdam* 0 l. 9, parts, how much will 112 *l.* at *London*, make at *Amsterdam*. Work by the Rule of three:

1 *li.* 0. 9 :: 112 *li.* *facit* 108 *li.* 8. *pts.*

9

1008

Again, if one pound at *Antwerp* is 1 *li.* 04 of the Avoir-du-poiz weight at *London*, then how much is 108 *li.* at *Antwerp* of the *London* weight?

1 *li.* 1. 04 :: 108 *li.* *facit* 112 *li.* 32 *pts.*

1,04

432

108

112|32

being a little above our hundred weight.

The like you may do for any other number of pounds, or for any number of Ells, or any other measure, to reduce the one to the other.

A Table of the Contents of this BOOK.

THe general purpoſe. page 1
Rules of Law to be obſerved 2
The Rates of Intereſt are the rule to eſtimate the price of any purchaſe. 3
Free Land worth 20 years purchaſe, and reaſons why it is worth ſo much 3,5
Value of the Leaſes of Land 6,7
Value of Houſes diſcuſſed 7,8,9,10,11,12
Whether a Long Leaſe or a ſhort Leaſe is the better? 13, 14, to 19
Value of Houſes out-right. 19,20
How to reckon for Taxes 20
Buying of Lives 21,22
Rules to calculate the following Tables, 23,24,25,27,28,29
A Table to reduce Decimal Fractions of pounds into li. ſh. d. 26
Seven Tables of purchaſe at the rate of 5,6, 7, *&c. per Cent.* 31,32
The uſe of the Tables explained by ſeveral queſtions 38,39
Four Tables of Purchaſe after a more vulgar way, 41,42
A more exact way to caſt up the worth of a purchaſe 43,44
The moſt exact way to caſt up the worth of a purchaſe 45,46

Two Tables of Purchaſe calculated for every three moneths 47,48
More Rules and Examples in uſing all the aforeſaid Tables 49,to 53
Of Reverſions 54
Five tables ſhewing the worth of one pound in reverſion at moſt rates of Intereſt 55
A more general table of Reverſions 56
The demonſtration and uſe of theſe Tables 57,58,59
Several Rules and Examples to find the worth of any Reverſion 60,to 65
A Plea for Intereſt 66
Large Tables of Intereſt at *6 per Cent.* from a day to 12 moneths 68,&c.75
The uſe of theſe Tables 76
A more exact way to reckon up the Intereſt of any ſum of money 77,78
A Table of Intereſt for every day in the year 79 to 82
The explanation and uſe of theſe Tables 83 to 90
Of Rebatement 91,92,93
Monethly Tables of Rebatement, from 1 moneth to 24 moneths 94,to 102
The uſe of theſe Tables of Rebatement 103, to 107

In the Second Part.

Of meaſures for length 110
To meaſure Boards, &c. 112

A Table of Board-measure 115
General Rules to measure Land 117
To measure a square field or parcel of land 118
To measure a triangular, or three sided parcel of Land 120
To measure a round piece of Land 121
To measure any small section of a greater circle. 123
To measure any parcel of Land in what form soever it lies, and to make a plat thereof 127
To measure solid Bodies of stone, timber, or such like 135
A Table of timber measure for true squared timber. 138
A Table to make a Ruler for Timber-measure 143
To measure Timber-which is not squared exactly 144
A Table for that purpose 146
To measure round Timber, and a discovery of the falshood therein 147
A Table for the measuring of round timber 154
Another Table for the measuring of round Timber after the common way 156
To measure tapering Timber, and the error used herein 158
Observations about Gauging 163

A table for the gauging of wine veſſels 167
The uſe of this Table 168
To meaſure Wine Veſſels by a gauging line or Rod 169
To make the ſaid Gauging line 171
A more large and exact table for the gauging of Wine Veſſels 176
Obſervations in meaſuring Beer or Ale veſſels 180
A Table for Gauging Beer and Ale veſſels 184
To make a Gauging Rod for Beer and Ale meaſure 188
Rules for Gauging great Tuns 191
A Table for Ganging ſquare Tuns from 1 foot to 20 foot ſquare 194
The uſe of the ſaid Table 196, to 204
A Table to meaſure round Tuns 205
The uſe of the Table 206
A Table for the reckoning up the duty of Exciſe, as it is now eſtabliſhed 209
Obſervations about Weights 212
Tables of the aſſize of Bread 217
Of liquid meaſures 218
Compariſons between Weights and Meaſures 219
Of dry Meaſures 221
Obſervations about Gold, Silver, and other Metals 222
Of the weight and meaſure of Water 225

A Table of Arithmetical proportions 228
The use of the said Table 231
A Table of Accounts, shewing the value of any great number of yards, ells, pounds, *&c.* of any Commodity 240
The use of the said Table 247
A Table for buying and selling any thing by the pound or hundred weight 249
A Table of expences or wages by the day, week, month, or year 251
A Table of the Kings of *England* since the Conquest 253
A brief Concordance and Chronology since Qu. *Elizabeth.* 255
A Table of all the Shires, Cities, Bishopricks, Market-Towns, Parish Churches, and Parks in *England* and *Wales* 18
A Table for the reduction of the weights of Forreign Countries to our English Avoir-du-poiz weight, &c. 20
A Table for the reduction of the Measures of forreign Countries to our Ell 22

FINIS.